THE

GEOGRAPHICAL MAGAZINE.

EDITED BY

CLEMENTS R. MARKHAM, C.B., F.R.S.

VOLUME II.—1875.

ILLUSTRATED WITH TWENTY-ONE MAPS.

196471

LONDON:

TRÜBNER & Co., 57 AND 59, LUDGATE HILL, E.C.

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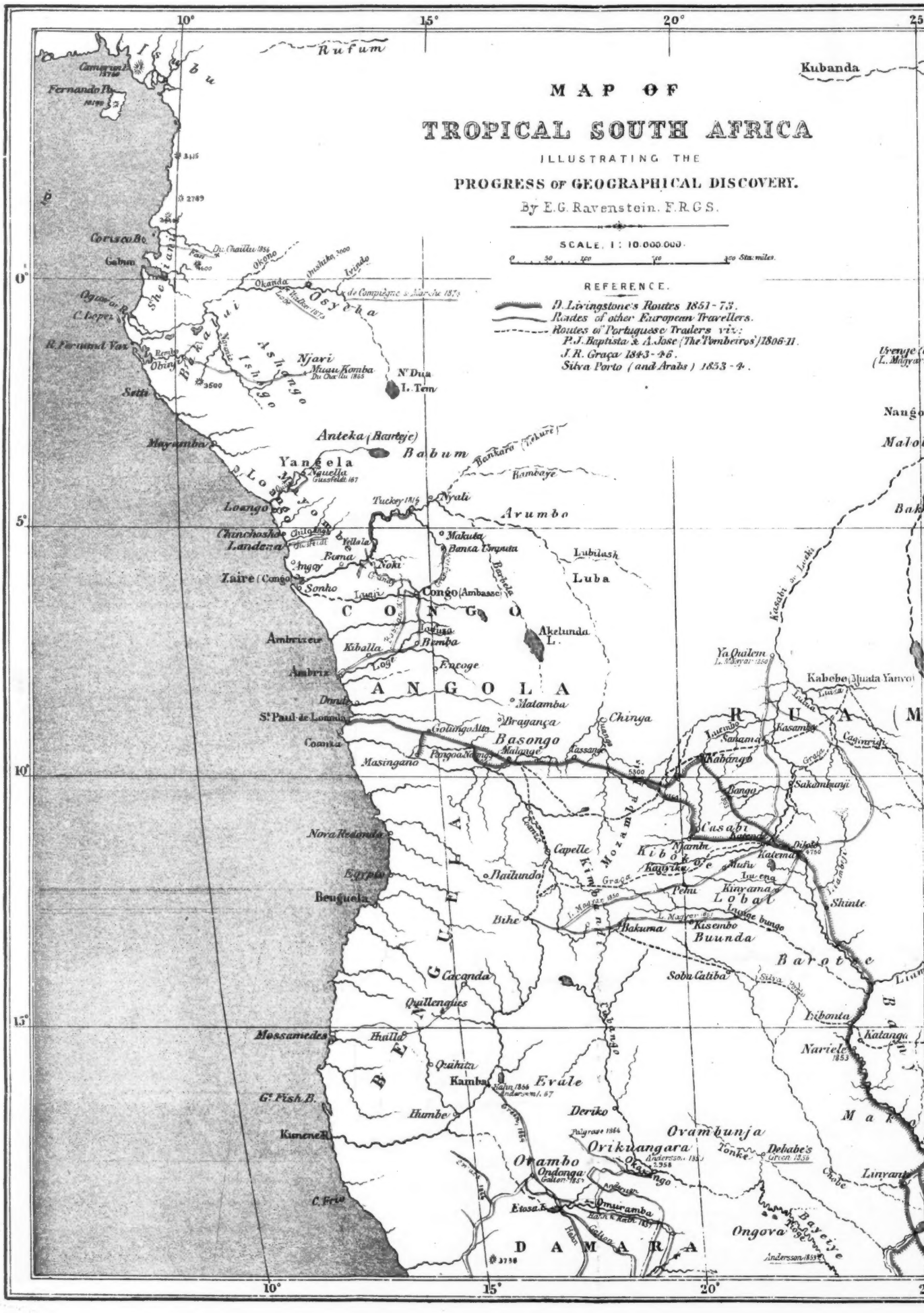
MAP OF
TROPICAL SOUTH AFRICA
ILLUSTRATING THE
PROGRESS OF GEOGRAPHICAL DISCOVERY.
By E.G. Ravenstein. F.R.G.S.
SCALE. 1 : 10.000.000.
REFERENCE.
D. Livingstone's Routes 1851-73.
Routes of other European Travellers.
Routes of Portuguese Traders viz:
P.J. Baptista & A. José (The Pombeiros) 1806-11.
J.R. Graça 1843-46.
Silva Porto (and Arabs) 1853-4.
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C. Lopez
R. Fernand Vaz
Setti
Mayumba
Loango
Chinchoshoe
Landana
Zaire (Congo)
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Dande
St. Paul de Loanda
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Masingano
Nova Redonda
Egypto
Benguela
Mossamedes
G.t Fish B.
Kunene R.
C. Frio
Anteka (Bartele)
Babum
Yangela
Nguella
Bankaro (Tekure)
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Makuka
Banza Gruputa
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Kiballa
Bemba
Embaca
A N G O L A
Matamba
Bragança
Golungo Alto
Pungo Andongo
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Tassango
Kabango
Ya Quilem
Kabebe
Muata Yanvo
R U A
Lurimbo
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Nariele
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Mozambique
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Livingstone 1873
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Capello & Ivens 1877
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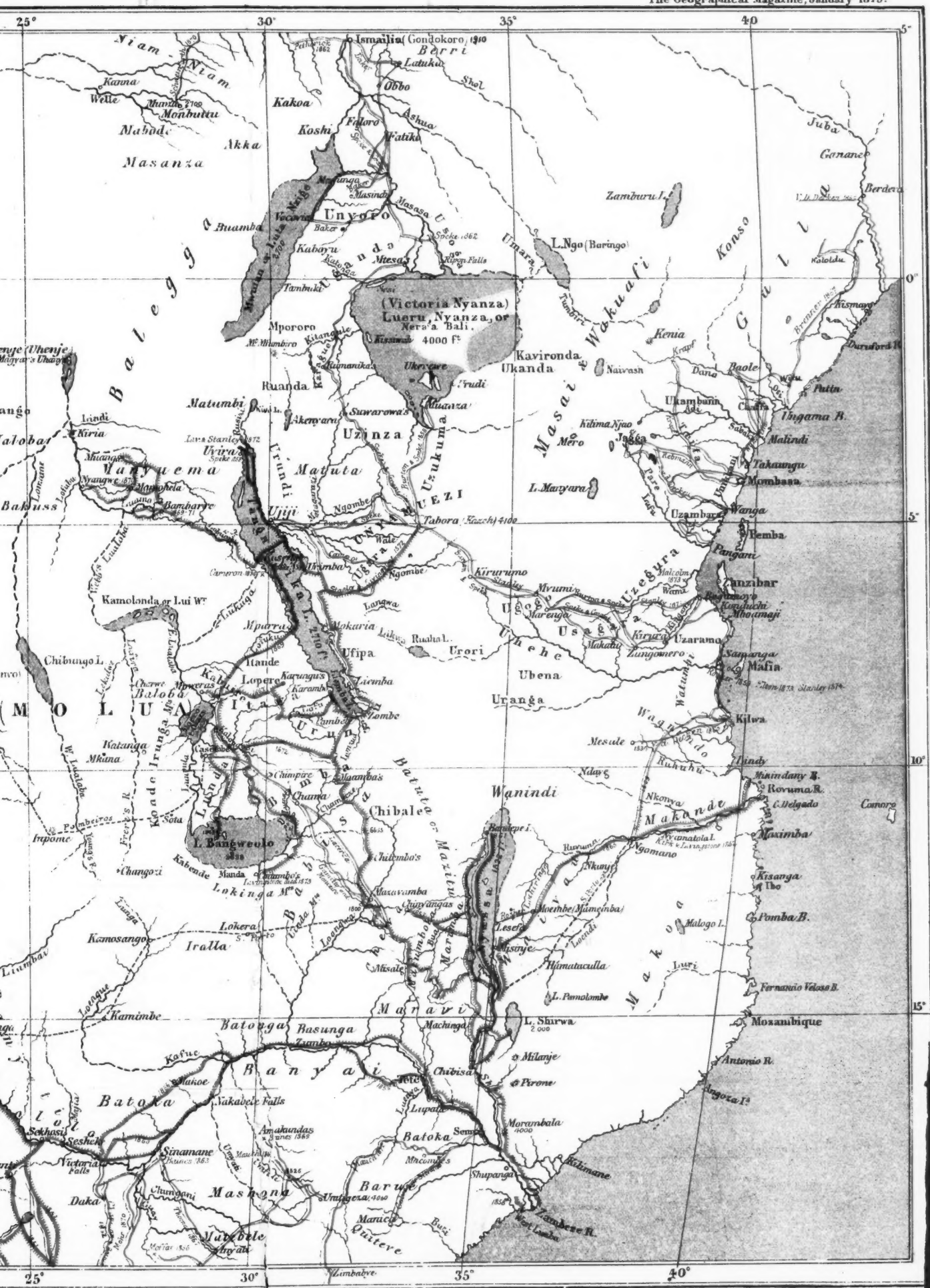
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Berdera
Zamburu I.
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L. Ngo (Baringo)
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Darudora R.
(Victoria Nyanza)
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Nera'a Bali.
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Kavironda
Ukanda
Naivash
Ruanda
Ukerewe
Prudi
Matumbi
Akanyaru
Suwarowa's
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Kiria
Ukambani
Ingama R.
Malindi
Mombasa
Takaungu
Jagga
Mero
Kilima Njao
Mamyema
Uvira
Matuta
Urundi
Uzukuma
Masai & Wakuafi
Gulla
L. Maryara
UEZI
Ujiji
Tabora (Kazeh) 4100
Wanga
Uzambara
Pemba
Pangani
Zanzibar
Kamolanda or Lui R.
Kirurumo
Uzegura
Usagara
Uzaramo
Samanga
Mafia
Chibungo L.
Ufipa
Urori
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Ubena
Urangá
Kilwa
Lopere
Karungus
Karamba
Tombe
Mesule
Ruhuhu
Tindy
Wagindo
Katanga
Mkina
Chimpare
Chuma
Wanindi
Rovuma R.
C. Delgado
Comoro
Chibale
Makande
Maxima
Pombeiros
Sota
Tete
Batoka or Mazitu
Nyanatola I.
Ngamano
Kisanga
Ibo
L. Bangweolo
Chitimba's
Kakende
Manda
Lokinga Mts
Mazavamba
Chinyangas
Moimbe/Mumeimba
Pomba B.
Malogo L.
Lokera
Kamosango
Iralla
Lesefa
Misanje
Himatuculla
Luri
Fernandão Veloso B.
Kamimbe
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Machinga
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2 000
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Chibisa
Pirone
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Nakabele Falls
Lupata
Morambala
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Sekhusi
Seshek
Sinamane
Victoria Falls
Amakundas
Batoka
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Kilimane
Shupanga
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Chungani
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Zambeze R.
Mutebele
Mayali
Quiteve
Buzi
Zumbabye
Mont Lumbo

THE

GEOGRAPHICAL MAGAZINE.

JANUARY, 1875.

THE GREAT AFRICAN DISCOVERY.

SURVEY OF LAKE TANGANYIKA BY LIEUTENANT CAMERON, R.N.

THE most interesting problems which remained to be solved in African geography were the system to which lake Tanganyika belongs, and the course of the Congo River. One of these great questions has been settled by Lieutenant Cameron, and he has thus made a geographical discovery of the first importance.

This Tanganyika problem has exercised the ingenuity of geographers for the last sixteen years, and has given rise to various conflicting theories. The lake was discovered by Burton and Speke on the 13th of February 1858. Speke crossed from Ujiji to the island of Kasenge, near its western shore, in March: between the 14th of April and the 14th of May Burton and Speke explored the northern portion of the lake in two open canoes, but in the end of May, owing to the failure of supplies, they were obliged to commence their return journey. Although the stay of these explorers was comparatively short, Captain Burton succeeded in collecting an astonishing amount of information from the Arabs. He describes the lake as occupying a position on the western extremity of the eastern third of the breadth of Africa, and as lying parallel to the Inner African line of volcanic action. The general formation suggested to him the idea of a volcano of depression, not of a reservoir formed by the drainage of mountains. Judging from the eye, the walls of this Tanganyika basin rise in an almost continuous curtain to 2000 or 3000 feet, and its length is over 300 miles, with a mean breadth of 20 miles. Burton found the water of the Tanganyika to be deliciously sweet; yet a careful investigation and comparison of statements, led him to the belief that the lake receives and absorbs the whole river system of that portion of the Central African depression whose watershed converges towards the great reservoir. Burton ascertained that the Rusizi flowed into the lake at the northern, and the Marungu at the southern extremity, while on the eastern side he had himself descended the incline for 240 miles, until he came to the shores of the lake, and had seen that the Malagarazi and other rivers flowed into it. He, therefore, conjectured that Tanganyika had no outlet, suggesting that it maintains its level by an exact balance of supply and evaporation, and that the freshness of its waters is accounted for by the saline particles, deposited in them, being wanting in some constituent which renders the salt evident to the taste.

But the uncertainty gave rise to endless discussion, and the solution of the question was certainly one of the most important achievements which remained for future African explorers. Some geographers maintained that the Rusizi flowed out of the north end of the lake, and that consequently Tanganyika was the main source of the Nile, and this theory received some confirmation from the reports recently collected by Sir Samuel Baker.* Others suggested that the outlet was from the eastern side, and that the Ruaha or Lufiji carried the waters of lake Tanganyika to the Indian Ocean;† while a third school, led by Dr. Beke, contended that the lake had no outlet.

Dr. Livingstone added to the knowledge on the subject which we derive from Captain Burton's admirable work. But the health of the great explorer was completely worn out when he reached the southern extremity of Tanganyika in April 1867, and little reliance can be placed on his observations, as he says that his head was out of order at the time. He was then suffering from a severe attack of fever, and in November 1871 he had lost all count of time. In March 1869 he passed along the west coast of the lake, at a time when he was again suffering from illness; and during the fourteen hours of March the 7th, making the voyage against a head wind, and most of the time in the darkness, he appears to have passed the part of the coast where the outlet actually is. In November 1871 he made a voyage to the northern end of the lake, and found that the mouth of the Rusizi is formed of three branches about 12 to 15 yards broad, and 6 feet deep, with a strong current of 2 miles an hour. He ascertained that all the rivers round the northern end flowed into the lake, and thus confirmed Burton's original conclusions.

Dr. Livingstone himself does not appear to have formed any definite opinion on the subject of Tanganyika hydrography. At Ujiji he observed that a current flowed northwards at the rate of nearly a mile an hour from February to November. Then evaporation is at its strongest, and the water begins to go gently south, until arrested by the flood from the great rains in February; so that there is a flow and reflow caused by rains and evaporation on the surface of a lake 300 miles in length. At one time he seems to have thought there was no outlet, for he accounts for the sweetness of the water by the existence of this current flowing "through the middle of the lake length-

* See our number for December 1874, p. 381.
† See *Ocean Highways* for July 1872, p. 103.

ways."* At another time he says that he has not the smallest doubt that the Tanganyika discharges somewhere, though he may not be able to find the outlet.† A little further on he says that the outlet of the lake is probably by the Longumba River into the Lualaba.‡ But there is some confusion about this name; for in another place the Logumba is said to flow into the lake with a rapid current.§

The question was left in a complete state of uncertainty, and the larger portion of the lake was unsurveyed and unvisited, when Lieutenant Cameron reached its shores on the 21st of February 1874, exactly sixteen years after their discovery by Captain Burton, so that the young explorer had most important geographical work before him on the lake, previous to continuing his adventurous journey to the far interior.

Before this work was commenced, Cameron was careful to complete the duty on which he was primarily employed. He had secured the safety of Livingstone's maps and last journals by supplying his servants with provisions to take them from Unyanyembe to the coast. But one of the most important of Livingstone's rough maps, with two note-books, was left at Ujiji, and Cameron's first care was to secure these precious relics, and to forward them by a sure hand to Zanzibar. They have now arrived safely in England. By these services Cameron has earned the lasting gratitude of all who value the labours of his great predecessor Livingstone.

The young lieutenant then devoted two months to the survey of the lake, and the investigation of the great African problem which previous explorers had failed to solve. He first established a point of departure by accurately fixing the position of Ujiji by a good set of lunar observations, and meridian altitudes. The longitude is 30° 4′ 30″ E., and the latitude 4° 58′ 3″ S. The height of the lake above the sea was fixed by seven boiling-point thermometers, four aneroids, and two of Captain George's mercurial barometers. The result by the boiling-point gives an elevation of 2710, and that by the barometers 2711·2 feet. The aneroids gave the same result. This is the first time that a mercurial barometer has been used in the interior of Africa to ascertain heights; and the result is very satisfactory.

Having accurately ascertained these data, the explorer proceeded to survey the southern and unknown portion of the lake, in a large boat with fourteen oars and a sail, which he had succeeded in procuring. He left Ujiji in March; and coasted to the southern end, examining river after river, and finding that they all flowed into the lake. He then proceeded to explore the western side, and, at a distance of 25 miles to the south of the Kasenge Islands, visited by Speke and Livingstone, he discovered the river which forms the outlet to lake Tanganyika on the 3rd of May 1874. This river is called the LUKUGA and the current was flowing out at a rate of 1·2 knots an hour. The slight current is exactly what might be expected, and what has been observed in the case of other streams when first leaving their parent lakes, as has been ably pointed out by our correspondent F.R.G.S. (see page 24). After proceeding 4 or 5 miles down the outlet, Cameron's boat was stopped by floating grass and enormous rushes. He found the chief near the river to be very friendly and intelligent; and he was informed that the Lukuga flowed into the Lualaba; but, being unable to proceed further in his boat, he returned to Ujiji; which place he reached on the 8th of May, in order to hasten his preparations for a further advance. The map showing the results of his survey is on a scale of 5 miles to the inch, and represents the shape of the lake as quite different from what has previously been laid down.

Lieutenant Cameron has taken great pains to obtain all the information possessed by the Arab traders, and, although no very great reliance can be placed on what they say, there can be no doubt that they have much knowledge, and that it is the duty of an explorer to obtain as much of it as possible. The Arabs told him that the name of the Lualaba, beyond Nyangwè—the furthest point reached by Livingstone—was Ugarowwa. One of them had been down it 55 marches, and had reached a place where there were ships and white merchants who traded largely in *chickichi* (palm-oil) and ivory. The name Congo was also mentioned. Cameron considered that these statements pointed unmistakably to the Ugarowwa and the Zaire or Congo being the same river, and he resolved, if possible, to ascertain the fact. There is indeed nothing improbable in the assertions of the Arabs. In the first place we know that Arabs, coming from Zanzibar, have been on the west coast of Africa. On April 3rd 1852 three Arabs, accompanied by forty carriers, arrived at Benguela, having gone by way of Ujiji, crossed lake Tanganyika, and traversed the territory of Cazembé. They were treated with great kindness by the Portuguese, and, as their venture was a success, it was probably repeated by others. It has been said that the name Congo is Portuguese, and that an Arab would not use it. This is a mistake. Diogo Cam, when he discovered that country in 1484, found its native name to be Congo, and it has continued to be so. The great river Congo was also discovered by Diogo Cam. He set up a stone pillar *(Padrão)* on the south side of the entrance, and called the river *Rio do Padrão*. He understood the natives to call it Zaire, but this is merely their general term for any large stream. The river afterwards received the name of Congo because that was the name of the country of which it formed a boundary. The native name of the river Congo below the falls was ascertained by Tuckey to be *Moienzi-enzaddi*. Its name above the falls is unknown. If Arab traders ever reached any Portuguese stations, they would most probably hear and repeat the word Congo. There is nothing absurd, nor even improbable, in the statements made by the Arabs of Ujiji to the English explorer.

Cameron appears to have made his preparations at Ujiji with great promptitude, although his difficulties are very serious, owing chiefly to the thieving propensities of his own people. He has dismissed and sent back to the coast all those who are not willing to proceed, and has started with the best set he could bring together, but with very slender supplies. But though the obstacles are great, the gallant young naval officer has much in his favour. His good temper and courteous treatment of all natives, with whom he comes in contact, will tend to smooth his way. He is already a great and general favourite among the Arabs at Ujiji, who have been most kind and hos-

* *Last Journals* ii., p. 5.
† Ibid, p. 158. ‡ Ibid, p. 159. § Ibid, p. 21.

pitable to him. He says that "they have noble ideas of their duty towards a guest, although an uninvited one;" and he "repays them by reading Steere's Suahili tales aloud, which they enjoy immensely. As they have no professional story-teller, they are always ready to hear them over and over again." At the same time this practice is excellent for perfecting his knowledge of the language. He has also found many of the people of the negro race to be intelligent, and he has never experienced the slightest incivility, probably because he is always careful to be punctiliously civil himself, and not to give any cause of offence.

Lieutenant Cameron's observations on the slave trade are especially interesting, and the attention he is giving to this painful subject, as well as the noble example he is himself setting, make him a very fitting successor to Livingstone in furthering the good cause. He says—"The slaves are wanted as porters, and the losses by death or desertion are enormous, and, therefore, the demand is great. The slave trade is depopulating large tracts, and the wretched fugitives are driven to sell each other as a means of subsistence. At present two goats are the price of a boy or girl of from fifteen to twenty, near Ras Kungwe, and in Marungu a goat was 4 *dotis*, and a good slave 5. Our efforts to stop the exportation of slaves are important, but they only check a portion, and that a small one, of the evil. The Wanyamwezi prey on the tribes who have no muskets, and every wretch who can steal or buy a slave must do so. The escaped slaves are another scourge, for they band themselves together, and live entirely by plunder. The number of resident Arabs in the interior is much larger than it used to be, and they all have slaves. The worst feature is that the greater number of these slaves have no employment, except when on a journey, and are not fed by their masters, so that they have to live by robbery. The *Ruga-ruga*, or banditti, round Taborah, are mostly slaves or runaways. In going round the lake I was constantly shown places where villages had been, and the inhabitants of which had been carried off for slaves. There is a great internal slave trade, and demand for slaves, which our cruisers can never touch, and, indeed, the stopping of the sea traffic is but too likely to increase the evil, for many now engaged in that traffic will settle in the interior, where the trade will continue to flourish." Cameron looks to the opening up of the great rivers and lines of communication by legitimate commerce as the only means of checking and eventually destroying the internal slave trade. It is from this point of view that he looks upon the identification of the Lualaba with the Congo as a discovery of most beneficial import to the people of Africa. His survey of lake Tanganyika, and his great discovery that its outlet flows towards the Lualaba basin, places him in the first rank of African explorers.

The further discovery of the course of the Congo will be the greatest achievement that remains to be done on that continent; for the difficulties are so serious that they can scarcely be exaggerated, and it will call forth qualities of no ordinary kind to surmount them. Cameron's first idea was to have obtained some light canoes, and, to have followed down the outlet from its commencement. He subsequently appears to have determined to make direct for Nyangwé, across the Manyuema country, and to descend the great river from that point. He of course can be the only judge, and he will no doubt have selected the route which, while promising valuable results, appears to present, on the whole, the fewest obstacles. He started from Ujiji on his lonely and chivalrous expedition, on the 20th of last May, and surely he will take the hearty good wishes of all true Englishmen with him. For not only is the gallant sailor, in spite of difficulties such as few are ever called upon to face, attempting a feat which will redound to the credit of his country, but he is also worthily representing, by his kindly treatment of the natives, that noble profession to which he owes some of his best qualifications as a traveller and as an officer.

The undertaking will also involve great expense, and it is necessary to anticipate the requirements of the bold explorer and his party by raising a fund to meet them. The Council of the Royal Geographical Society, whose agent he is, has headed the Cameron Expedition Fund by a subscription of 500*l.* Many other sympathizers have also come forward, and the amount already subscribed is 994*l.*, or, including the grant of the Council, 1494*l.* Against this has to be placed 61*l.* for advertisements and additional articles of outfit sent to Zanzibar through Mr. Stanley, 105*l.* drawn in March, 66*l.* for payment of servants and of the messenger who brought the letters and Dr. Livingstone's map and journals to the coast; and 312*l.* drawn for expenses after completing the survey of lake Tanganyika. This leaves a balance of 950*l.*, which, it is confidently hoped, will be largely increased as soon as the people of England are fully aware of the necessities of their young countryman in the heart of Africa, and of the glorious work that he is bravely attempting to do, alone and single-handed.

Our map of Tropical South Africa illustrates the discoveries of Lieutenant Cameron, and shows the region which he is now attempting to cross. It is also intended to illustrate the progress of geographical exploration. It exhibits the routes of all European travellers who have visited the interior up to the date of publication, and thus enables our readers to realise to how great an extent our maps are necessarily based upon the reports of natives, and how much there is still left to be cleared up by future explorers. With respect to the hypothetical geography of our map it may be appropriate to offer a few remarks. We have availed ourselves to the fullest extent of the very ample native information collected by Livingstone. There can be no doubt that Livingstone's Western Lualaba is identical with the Lualaba across which the Pombeiros were ferried when travelling from Muata Yanvo's to Casembé's town. On the maps published hitherto, including that "conjectural" one accompanying Dr. Livingstone's *Last Journals*, which professes to embody Livingstone's views *par excellence*, that river is made to flow to the south and west, and having entered the Kasabi or Loke, it is assumed to join the Western Lualaba. We are, however, of opinion that it flows to the north. The account of the Pombeiros contains nothing to the contrary. L. Magyar, who would certainly not have omitted mentioning so important a river had he crossed it, says nothing about it, and its northern direction is, moreover, most in accordance with Livingstone's own statements. From Mpweto's, we are told, it is four days to the Lufira in a westerly

direction; Katanga lies ten days south from where the Lufira enters lake Kamolondo, and ten days north from the sources of that river. From Katanga to the Western Lualaba is seven days W., and to lake Chibungo (Lincoln) twelve days N.N.W. Elsewhere we learn that the distance between the Eastern and Western Lualaba is twelve days. These distances and bearings are quite reconcilable with our map, but not with that prepared for the editor of the *Last Journals*. If our interpretation is the correct one, the Lomame and Loeki must be distinct rivers, thus confirming the statement of one of Livingstone's native informants. The Kasabi, or Loeki, according to Ladislaus Magyar, flows to the north and east, and finally enters a lake (Mouro, or Uhanya), which is probably identical with Livingstone's Urenge or Ulenge, which Mr. Waller has thought fit to omit from his map.

As regards lake Tanganyika we do not believe in its connection with Mwutan N'zige, and accept unreservedly Cameron's assertion of its discharging a river to the west. The geography of the Nyanza requires further elucidation. Livingstone tells us that the lake is called Okara on its eastern side, and communicates by a narrow arm with the Kavironda (on Mr. Waller's map Livingstone is misinterpreted in the usual manner, for Kavironda is there shown as a separate lake, and the Kidette River, which according to Livingstone is an affluent of lake Naibash, is made to connect it with the Okara). Livingstone thus confirms Colonel Grant as respects the great extent of the lake in question, and the facts adduced by the latter go far to convince us of the continuity of the lake between Muanza, where Speke first saw it, to Uganda in the north. Colonel Gordon's explorations will no doubt set at rest this much discussed question. In conclusion, we may state that Livingstone's journal has enabled us to trace Roscher's route more accurately than has been done hitherto. Roscher crossed the Rovuma at Hingomanye, identical with Livingstone's Ngomano, where there is a much frequented ferry. Roscher's Mamemba is Livingstone's Moembe, and the village Hisonguny, where Roscher was murdered, and his journals were stolen, is within half a day's journey from that place.

THE MINERAL WEALTH OF CENTRAL ASIA AS BEARING ON RUSSIAN PROGRESS.

"In conquering Turkistan," said a Russian officer to me last year, on the road to Samarcand, "we are playing a game of roulette. We have lost our first few stakes, and lost heavily; our only chance of recouping is to play on."

And, in truth, there is a strong flavour of gambling about the first recorded movements of Russia in this direction. It is probable that Peter the Great, in his persevering efforts to obtain a hold upon the regions beyond the Caspian (as a set-off against his expulsion from the Azoff and Black Seas by the fatal treaty of the Pruth), was actuated quite as much by the golden legends of the Asiatics respecting their fabulous abundance of precious metal, as by any hope of opening a new highway for the commerce of Russia. The instructions given by him to the exploring expedition of Florio Beneveni and Niccolo Minera (1721—1725), specify as its two main objects:—1. To ascertain the feasibility of diverting the Oxus into the Caspian: 2. To estimate as exactly as possible the mineral wealth of Central Asia. Accordingly, we find Beneveni sending his imperial master "a handful of sand mixed with gold-dust, gathered in the Lower Oxus;" and Minera (who penetrated as far as Balkh) filling his despatches with a crowd of half-true, half-mythical details; how the mountaineers of Badakhshan "sink large fleeces of wool in the sand of their rivers, and after a while dig them up covered with gold-dust;" how "there are mighty treasures of gold, silver, and musk, in the cities of Kaskar (Kashgar), Dizan, and Margilian;" how the river that flows past Samarcand "is called Zer-Affshan (gold-giving), because of its bringing down much gold from the eastern hills;" with much more to the same purpose. These beliefs long survived their originators, and were greatly strengthened by the amazing influx of precious metals into Orenburg and Troitsk between 1748 and 1755, following upon the plunder of the ancient treasuries by Nadir Shah.

It was reserved for the present generation to dispel these visions, by showing, through clear and minute investigation, what Central Asia possesses and what it does not. Immediately upon the fall of Tashkend, in June 1865, which finally established Russia's supremacy in Turkistan, the local Government began to fit out the expeditions which, in the two following years, surveyed the basin of the Syr-Daria, and the adjacent kingdoms of Bokhara and Kokan. These surveys established the richness of Eastern Turkistan in coal, iron, lead, copper, naphtha, saltpetre, and rock-salt, as well as the presence of gold in various spots; while the statements of Russian as well as native travellers agree in asserting an almost fabulous abundance of these and other minerals in the spurs of the Thian-Shan Mountains (which divide Asiatic Russia from China) and the still unannexed hills of Badakhshan.

Taking the coal first, as the most important item in a region where the fruit-trees have frequently been cut down for fuel, we find, in Eastern Turkistan alone, five fields already opened for working, viz., two in the Kara-Tau Range, which runs parallel with the Syr-Daria from Djulek to the town of Turkistan; one on the Tchirtchik, 40 miles north-east of Tashkend; one in the hills to the south of Khodjent, the easternmost of the Russian cities on the Syr-Daria; and one (the largest) on the Naryn, or Upper Syr-Daria, in the Khanate of Kokan. Of this last I received a full written description and map, during my stay at Tashkend last autumn, from one of its proprietors, M. Mikhail Feodoroff, who accompanied Colonel Schaufuss's expedition into Kokan in 1867. After detailing his discoveries of naphtha, lead, copper, iron, &c., he proceeds as follows:—

"The coal-fields begin from the very bank of the Naryn, and cover a superficies of 96 miles, distant 40 miles from the Kokanese town of Namangan, 80 from Kokan itself, and 200 from Tashkend..... Our shafts have laid open four beds, one above another; the first 1¼ arsheen (2 ft. 11 inches), the second 1½, the third 2, and the fourth 3 arsheens. All around them lie rich veins of lead, iron, and copper.... The coal might easily be floated down to Tchinaz on rafts, and carried thence by land to Tashkend (43 miles).

The right of working has been fully conceded by the Khan of Kokan."

M. Feodoroff told me, in the course of conversation, that the private coal-fields are not thriving at present, and that both he and the other proprietors would willingly dispose of them, but doubted whether any foreign company would be allowed to exist in Turkistan, whence all foreigners are so jealously excluded.

With regard to the other fields, the coal obtained from them is satisfactory both in quantity and quality. The chief obstacles are—1. The extreme difficulty of transport in this roadless region; 2. The aversion of the native population to coal fuel—which last, however, is not unnatural, their stoves and ovens being (as I have had occasion to notice when travelling among them) adapted solely for wood. Still, despite these hindrances, much has already been done. The long talked-of introduction of coal into the Aral flotilla of six steamers was carried out in 1868, 40,000 poods being served out at once; and as early as the end of 1869, coal was selling both in Tashkend and Khodjent at 20 kopecks (6½*d.*) per pood—the pood being 36 lbs. English. For the present, however, the hopes of the Turkistan coal-proprietors appear to centre chiefly in the establishment of regular steam navigation upon the Syr-Daria and Oxus, as well as upon the Orenburg-Samarcand Railway; but it is clear that, with these new fields superadded to the 16,000 square miles of splendid anthracite on the Lower Don, the 15,000,000,000 poods of the "Moscow Basin," the coal-beds of Lithuania, Kiev, and the Caucasus, Russia may yet become a great source of supply, as soon as her communications shall be completed.

Naphtha seems to be tolerably abundant along the Upper Syr-Daria. M. Feodoroff's report mentions several fine sources on the Mai-Boolak River, about 12 miles from the Naryn coal-field above described. According to him, the working of these springs dates back to a very early period.

"In the course of one of our borings," says he, "we came upon traces of an old well, and had no sooner cleared away the rubbish which blocked it, than the naphtha spouted into the air like a fountain, rising in such abundance that we took out in that one day 400 buckets. The well was of considerable depth, the sides being strengthened with facings of stone and timber in alternate layers. Among the *débris* we found a broken earthen vessel of large size, which had evidently been used for drawing up the naphtha; and from this and other traces we conjectured that this well must belong to a remote period, and had probably borne a part in the religious rites of the fire-worshippers who in former ages inhabited this part of Central Asia."

Rock-Salt is found in numerous spots, but little worked as yet. One of the richest deposits lies about 3 miles from the village of Samgar, on the frontier of Kokan, eastward from Khodjent, the stratum being of considerable superficies, and 2 arsheens (4 ft. 8 in.) thick. In 1872 the market price at Tashkend was 4 roubles (12 shillings) per pood of best salt, and 30 kopecks (10*d.*) ordinary quality. Of late, however, the markets have been shaken a good deal by the competition of the new quality found in the hills around Samarcand (quoted at 50 kopecks per pood) which is distinguished by a pinky colour and a very agreeable taste.

The richest veins of *lead* are those in the Toorlan ridge (Kara-Tau Hills) between the town of Turkistan and the village of Tchulak-Kurgan. This field (worked by the Kirghiz for a considerable period before the Russian conquest) is now the property of M. Pervooshin of Tashkend, one of the richest and most enterprising merchants in Central Asia. The proportion of lead is $51\frac{7}{10}$ths per cent., with a slight admixture of silver. Since 1869 (the date of the contract between M. Pervooshin and the Artillery Department for the supply of lead to the army of Turkistan) the price of lead has fallen from 8 to 3 roubles per pood. The Khodjakent lead-mines, near Tashkend, yield 23 per cent.

Saltpetre abounds in Eastern Turkistan, especially in the hills beyond Karshi (Moore's "Neksheb") a large town 91 miles S.E. of Bokhara. Here the late Emir had a large powder factory, the powder of which was sold in Bokhara for 15 kopecks (5*d.*) for 1¼ lb. Other factories existed in Kokan likewise. The best saltpetre, however, is procured from Guzar, in Northern Afghanistan, which is said to rival Demavend itself in this respect.

Iron is found either mingled with or in close proximity to nearly all the principal coal-beds; but the richest "finds" hitherto are in the Kara-Tau range, containing the Ken-Tass 61¼th per cent. of iron, the Kok-Ti River 50-52 per cent., and the Ausgen River 30 per cent. In the province of Semiretchensk likewise (the north-easternmost corner of Russian Turkistan, lying between Lake Balkhash and the Thian-Shan Mountains) there have been discovered two iron-fields in the neighbourhood of Kopal, about a mile apart, yielding from 12 to 20 per cent.

Kerosene and *asphalt* have been discovered in large quantities in the neighbourhood of M. Feodoroff's coal-fields on the Naryn, near Namangan. The market price of kerosene at Tashkend in 1871-2 was 20 kopecks (6½*d.*) per lb. Asphalt is now beginning to be much used for plastering roofs, to make them proof against rain; the cost of this being 3 roubles (9*s.*) the square *sajen* (7 ft).

Copper is found in considerable abundance along the beds of the smaller rivers; and veins of it have been discovered about 40 miles from Sergiopol, containing from 1 to 2½ lbs. of copper per pood. Large quantities of copper were obtained by the Khivans, in the beginning of the present century, from the Sheikh-Djelli range (where gold also, according to tradition, formerly abounded) skirting the Oxus from Urgendj down to Bend; but these works have been long since abandoned. Similar veins are believed to exist in the Balkan Hills, which run parallel with the S.E. seaboard of the Caspian; but no accurate survey has yet been made.

As for *gold*, the exaggerated reports of which first drew the Russians to Central Asia, it is the rarest of all metals in Eastern Turkistan, though still sufficiently abundant to feed the hope of important discoveries hereafter, when the great boundary-range shall have become better known. The precipitous gorge of the Tchirtchik, however (which falls into the Syr-Daria near Tashkend), has disappointed the expectations formed of it; and in no part of the country does any organised system of mining exist. The earliest stages

of Californian and Australian digger-life are here to be seen enacting themselves over again. When a Kirghiz or a Doungan wants a dinner, and sees no prospect of earning one, he simply betakes himself to the nearest likely spot, and there, by "pan washing" or breaking the quartz with a hammer, picks up enough to keep him for a day or two. Russian agents, whose professional journeyings have taken them a good deal across the Chinese border, tell me that, on the other side of the Thian-Shan, gold sells considerably under the market-price, and that it is no uncommon thing for a Chinese trader to contract for the entire amount of gold obtained by a gang of labourers in a whole summer's work, on condition of clothing and feeding them for a twelvemonth. In the present day, the golden legends which formerly grouped themselves around Kashgar, Yarkand, and the valley of the Zer-Affshan, seem to be concentrated upon the little mountain triangle of Badakhshan. I do not, indeed, place much reliance in the stories told of it by the Afghan and Bokhariote traders whom I met at Samarcand; but enough has been ascertained respecting this Eastern El Dorado to make it certain that the falling off of its once famous trade in rubies and lapis-lazuli is not in any way owing to the exhaustion of the supply, but simply to the difficulty of transport and the dangers of the caravan route.

Summing up, then, the results already arrived at, we find six great mineral storehouses in Central Asia—the Kara-Tau Hills, the main range of the Thian-Shan, the Samarcand Valley, the Balkan ridge along the eastern Caspian, the Khivan range of Sheikh-Djelli, and Badakhshan. The three first of these have been in the power of Russia for years, and her settlements on the eastern seaboard of the Caspian have made her virtual mistress of the fourth. The fifth has just been given into her hands by the conquest of Khiva; and all that now remains for her to do is to annex the sixth.

"It must be admitted," says Captain Kostènko, in his admirable report upon Central Asia, "that hitherto our researches into the mineral wealth of Turkistan have been fruitful of hopes rather than results; but, judging by what we have discovered during the last three years, and by the advantageous position of the various mineral strata in the immediate vicinity of beds of coal, we have a right to anticipate a bountiful harvest in the future."

Here, then, is a clear and definite object, infinitely more feasible, as well as more remunerative, than the visions of impossible gold-fields, or the romantic dreams of universal conquest, which floated before the minds of the original invaders. In the face of such calculations, the Governor-General of Tashkend may fairly say with Bertram—

> "No visionary fool had I
> Sought El Dorados in the sky."

Even in Russia's apparent madness of annexation there is a certain method. Hitherto, indeed, she has been literally "jetant son argent par les fenêtres."

In 1868 (the year of the capture of Samarcand) her annual deficit was 2,500,000 roubles (335,000*l.*); in 1869 it had risen to 4,000,000 roubles; and the two following years (though the total number of troops in Turkistan did not exceed 26,000 of all arms) showed an even more unpromising result. But all this matters nothing, if it only bring her nearer to the full possession of treasures sufficient to repay her losses a thousand times over. The three great essentials of a new country are coal, iron, and gunpowder; and Turkistan, as we have seen, is richly supplied with all three. The position of the principal mineral strata side by side with beds of coal is an immense advantage; nor are able and energetic directors wanting. What is wanted now is an adequate supply of labouring hands; and these the Russian Government can always command if it will. On my way up the Syr-Daria I saw caravan after caravan of Russian peasants plodding eastward, drafted from the Volga to the wild regions lying between Lake Balkhash and the Chinese border; and the same fiat which sent them thither can at any moment people the mines and factories of Turkistan with the artisans of Central Russia.

As regards the future annexation of the Kashgar-Davan Range and the plateau of Badakhshan, the proved abilities and sleepless hatred of Yakub Beg are too palpable an obstacle in Russia's path, not to be fully taken into account by her. All Russian critics readily admit that the new master of Kashgar may become a formidable enemy; but even for this evil there is a cure. The entanglement, like other Gordian knots of Eastern diplomacy, may be cut if it cannot be unravelled. The ruler who has been raised by one revolution may be overthrown by another—no difficult matter for the proverbial skill of Russian emissaries; and, once fallen, he may easily be replaced by some marionette, worked by the concealed fingers of Russian officialism. Nor is a plausible cause of quarrel wanting. "Yakub Beg," says one of the greatest living Russian authorities upon Central Asia, in a recent *résumé* of this question, "is specially indignant with us on account of our erection of Fort Narinsk on the left bank of the Upper Syr-Daria, which he considers part of his own dominions. He has evidently no conception of the virtue of an international treaty, and refuses to be convinced that, by the treaty of Tchugutchak, the Chinese Government ceded to Russia not merely the left bank of the Syr-Daria, but all the parallel ridges of the Thian-Shan as far as its southern slope."

Here, then, is a *casus belli* ready made; and its probable consequences are stated frankly enough by the same writer:—

"It is sufficiently certain that Yakub Beg wishes to have no connection with us whatever, hating and fearing us equally, ever since he felt our strength at Ak-Metchet and Tashkend, when he served as an officer in the army of the Khan of Kokan. His tyranny and jealousy know no bounds, and the people, groaning under his yoke, look back with regret to the period of the Chinese rule.* [Here follows a short account of the attempts made by MM. Pervooshin and Khloodoff to open a trade with Kashgar, and their failure owing to the restrictions imposed by Yakub Beg.] It would be well both for our local traders and for Russia at large, if there existed in Kashgar a recognised and legitimate government, with which it would be possible to establish friendly relations. It is true that Kashgar itself is an insignificant town, and

* It should be remarked, however, that this account is contradicted both by Mr. Shaw's statements, and by the information given me on the spot by native traders.

Djiti-Shahr [Seven Towns]* a poor country; but it contains several cities of importance, *e.g.*, Yarkand (with 30,000 inhabitants), Khotan, Ak-su, &c., which might form a promising market for Russian goods, and, more desirable still, a connecting link between our traffic and that of the north-west provinces of China. But *so long as Yakub Beg reigns in Kashgar* our merchants will be in no haste to send their goods thither."

This significant deduction recurs farther on in the same work, with increased emphasis:—

"To conquer Djiti-Shahr [Kashgar] would not suit us at present: not that the resistance encountered would be at all formidable, but the occupation of the country would be attended with very heavy expenses. Our best way would be to *establish there a definite Chinese Government*, with which we might not merely treat, but maintain friendly relations. The country is important to us not merely from its intrinsic richness, but also as connecting China with Tashkend and Samarcand. The caravan route from Western China into Kashgar is at first identical with that to Kuldja and Tchugutchak; but at Barkool it branches off along the southern slope of the Thian-Shan, connecting the important towns of Ak-su, Ootch-Toorpan, Yarkand, and Kashgar. The shortest and best route into our territory is through Kokan, whence goods may be carried to Tashkend on one side, and Samarcand on the other."

It is a common error to suppose that all the movements of Russia in the Far East are, so to speak, parts of one definite and well-organised programme, dated back by some enthusiasts as far as Peter the Great. Nothing could well be farther from the truth. By the admission of the Russian generals themselves, their most successful movements were altogether unpremeditated, and frequently attended with consequences the very reverse of what they had anticipated. Forage, water, freedom of communication, the necessity of securing commanding positions—these, and no niceties of strategy, were the moving springs of Russia's advance. In fact, the whole conquest of Turkistan has been a kind of Chinese puzzle, constantly requiring fresh additions to eke out and complete what is already gained. The last and most valuable addition of all—Badakhshan—is still to be made; and then, with her flank secured against attack, Russia will have leisure to pursue her new scheme of a great commercial highway from east to west, which shall draw into itself the entire traffic of Kashgar and Western China, while rigidly excluding any rival currents that may set in from the side of India.† But into this branch of the subject it is best not to enter; for, at this time of day, to raise again the *vexata quæstio* of Russia's future relations with India, would be a worse crime than recommencing the Tichborne trial.

D. KER.

* The native name of the country, formerly called "Alti-Shaar" (Six Towns).

† According to the Russians themselves, the competition of Anglo-Indian merchandise is already formidable. The value of the goods passing annually through Bokhara alone is 40,000,000 roubles, or between 5,000,000*l.* and 6,000,000*l.*; and of these a large proportion are English.

THE JOURNEY OF THE CHINESE TRAVELLER CHANG-TE-HUI,

FROM PEKING TO THE SUMMER RESIDENCE OF THE PRINCE KUBLAI IN WESTERN MONGOLIA, IN THE YEAR A.D. 1248.

Translated from the Russian version of F. Palladius, by EUGENE SCHUYLER, Esq.

MR. PADERIN, the Russian traveller who last year visited the ruins of Karakorum, alluded, in his account of the journey, to this Chinese narrative. In a note to my abstract of Mr. Paderin's paper, I called attention to it as likely to be worthy of translation. The same accomplished lady* who had supplied the translation of Paderin had already written to say that she had procured the Russian version of this ancient journey, and she had most kindly offered to translate it if desired, when I received the following translation from Mr. Eugene Schuyler, Secretary of Legation at St. Petersburg for the United States of America, and well known for his travels in Turkistan, of which he gave an account last summer at the Royal Geographical Society. I am much indebted to Mr. Schuyler for having taken the trouble to search out this paper (by no means easy to find), and then to translate it and send it to me for publication.

Father Palladius does not, at least in the notes appended, tell us who Chang-te-hui was; but apparently he was one of those doctors of philosophy or religion whom the princes of the family of Chinghiz seem to have had a fancy for summoning to their presence from very long distances. A similar narrative by a Taouist Doctor—Kiu Chang Chun—who was summoned by Chinghiz himself from the heart of China to the Kaan's camp in Badakhshan, was translated into French by the late M. Pauthier, in the *Journal Asiatique*,† and has just been translated again from the Chinese (into English), with valuable notes, by Dr. Bretschneider, of the Russian Legation at Peking.‡

Mr. Schuyler says in his letter:—"I have transliterated the Chinese names so as to give the exact sound of the Russian, pronouncing the vowels as in Italian and the consonants as in English. Palladius follows the Peking pronunciation, which differs much from that of Canton." It is a fact also that the Russian ear takes up sounds differently from the English one, so that from one or other of these differences, or both combined, it is sometimes not easy to recognize tolerably familiar Chinese names in their Russian shape.§ Hence I have sometimes added (in brackets or in notes) the names as presented in English sources. The name of the traveller himself is written by Palladius (according to Mr. Schuyler's transliteration) *Tchjan-de-hoi;* it is given by Dr. Bretschneider (who cites a passage) as *Chang-te-hui*, which I have adopted above as more like what we are used to.

H. YULE.

* Madame Fedchenko, the widow of the lamented traveller, and the companion of his explorations.

† Ser. vi., Tom. ix.

‡ In the *Chinese Recorder and Missionary Journal* (Shanghai), for July—August, 1874.

§ Thus *huan* or *hien*, the denomination of what is commonly called the third class of city, is written *sian; ho* for river appears to be written *he; K'hitan* is written *Kïdan*, and so on.

From *Memoirs of the Siberian Section of the Imperial Russian Geographical Society*. Parts ix. and x., p. 582. Irkutsk, 1867.

NOTES OF THE CHINESE TCHJAN-DE-HOI DURING HIS JOURNEY IN MONGOLIA IN THE FIRST HALF OF THE 13TH CENTURY.

[*Translated from the Chinese by the Archimandrite Palladius.*]

I LEFT Pekin, after ten days' stay there, passed the station Sin-dian in the place Shuan-ta-bu, and came to Nan-kow. Going out of the north mouth of the defile I went in a westerly direction, and passed the station Yui-lin, where there is the inn Lei-tsia-dian, and arrived at Huai-lai-sian. On the east of the city a bridge is constructed of trees laid crosswise, and above and below of stone. On the west of the bridge is a village, but the city is completely ruined.

Going westward from here, I passed on the southern side of the mountains Tsi-min-Shan, where is a post-station called Pin-yui. On the very top of the mountain there is an abode of Buddhist monks. Further on I went along the mountain to the west, and then to the north up the river San-gan-He. Across the river a bridge is constructed, on which the road goes west to De-sin-fu.

On the north I passed the station Din-fan-shui, crossed the "Stone Staircase," and arrived at Siuan-de-tchzhow. North-westerly from here I passed through a defile of the sandy range to the station of Siuan-pin, and through the defile De-shen-kow arrived at the range of mountains Ehu-lin.[1] On coming down from these mountains is a station—Bo-lo. From here to the north, stations are constructed and managed by the Mongols. Every station is called after the name of the person managing it.[2] Turning from this range to the north-east, I began to see kibitkas and tents of felt, and nomad villages, in places where there is grass and water, pasture for cattle, and nothing else. Here, Chinese customs are no longer observed.

I soon passed Fu-tchjow, of which only an empty ditch remains.[3] On the north from here I came to Tchu-tchjow. There are not more than 100 families that live in it. Here is a Government Office established by the Emperor. There are also magazines belonging to the Department of Salt. On the east of that city is a salt lake, about 100 *li* in circumference, called the "Dog's Lake," on account of the similarity of its shape to that of a dog.[4] More than 100 *li* north of the city I noticed an old rampart, which stretched far off along the mountains and deep valleys. On the south a ruined town is joined to it. At the question —What is this? the inhabitants answered that under the former dynasty it was a fortified place, in which the boundary guard was quartered.[5]

From this fortress I went four stations more, and then came to Sha-to, in the whole expanse of which there are no stones or clods of earth. From a distance you see, as it were, a chain of low hills and hillocks; but when you come to them they are only sand-heaps. The trees which can grow on this soil are only elms and willows, and these are feeble, scattered about, and grow in clusters. The water is everywhere saline. I went in Sha-to six stations, and then came out of it.[6] After that I went north-westerly one station to the lake Yui-err-po. There are really two lakes, both in circumference more than 100 *li*. Between them is a dry passage from north to south. On the south-west of the lake is the temporary palace of the Princess. The external walls of the palace are more than 10 feet high, and about 2 *li* in circumference. In the middle there is constructed a living-room, with two additions on the sides. Behind it, on the north, is the Pavilion of the Tortoise. On the sides are wings. In front there rises a look-out tower. When you go up on it you obtain a very distant view. On the east of the palace are placed the houses of the peasants and artizans, which constitute something like a village. There is a tower with the inscription "In-hoi" (the meeting light, or world).[7]

Four stations from the lake are traces of a long wall which extend to a very great distance. This is also the external rampart of the former dynasty.

Fifteen stations further along runs a river which in depth and width is equal to three-tenths of the river Hu-to (in Northern China). To the northward it is called Kilulian (Kerelun*), that is, "little ass." On both its banks willows grow plentifully. It flows to the east, and has a very rapid current. The residents there say that there are fish in it 3 and 4 feet long, which, however, it is impossible to catch either in spring, summer, or autumn, but in the winter they make holes in the ice and catch them. Along the river there live Mongols and Chinese together. There are some little huts, with earthen roofs. Many cultivate the land, but they only sow hemp and wheat. On the northern side of the river is a large mountain, called Ku-su-vu, that is, "Black Mountain." If you look at it from some distance there seems to be a thick forest on it, but when you are near this turns out to be dark stones, which receive this colour from the constant mists on the mountain.[8]

From the southern side of the mountain I went south-west nine stations, and came to another river, in width and depth equal to one-third of the river Kilulian. Here there are also large fish, which are caught in the same way. This river runs to the west, and is exceedingly swift, so that it is impossible to cross it. In the northern language it is called Kun-du-la, that is "the hare."[9] I went down the river to the west, one station, to a wooden town constructed by the Kidans [Khitans]. It is about 3 *li* in circumference; the back is turned to the mountain, the front to the river. From this place the river runs to the north.[10]

From this village to the north-west, after passing three stations, I arrived at Bilihedu—a place where there are many artisans busy with making bows.[11] Then, after one station, I passed by a great lake, about 70 *li* in circumference. The water of it is unusually clear and pure. According to the northern dialect it is called Vuvuge-Nor. From the lake there is a special carriage road to Kholin [or Holin] (Karakorum), which goes first southward and then westward to the distance of more than 100 *li*.[12] From the lake directly west is a small wooden city, also constructed by the Kidans [Khitans]. To the west the city opens on a broad valley, 100 *li* in circumference. Around it are mountains on every side. On their northern side are many pine-trees. Along the water there are poplars and thick willows. In the middle of it runs the river Kholin.[13] The inhabitants are greatly occupied with

* Which we usually find written as *Kerulun*. The Hu-t'o-Ho runs down from Shansi into Chihli, passing Ching-ting-fu.

agriculture and irrigate their fields. There are also kitchen gardens.

At that time it was the last decade of the first autumn moon (August), and the millet and barley had already dried up. When I asked the reason of this, of the farmers, they told me that three times already there had been a white frost.

From the valley north-west, I went one station to the mountain called *Horse's Head*. The inhabitants said that the mountain received this name because there was an immense horse's head on it. Going by the north side of this mountain, I turned to the south-west and went past the mountain Hulan-tchi-gin,* that is *Red Ear*, so called because it is like a red ear. Here, there are artizans and artists, who work for the Mongols. Here is the river Tami running north-east.[14] After that, I went a station to the "Black Signal." It stands by the side of the post road. Its height is no more than 5 feet. In circumference it is more than 40 paces. Its form is four-cornered. It stands alone in the valley, and is very visible. From afar off you could take it for a large boundary post. Once it received this name.

From the signal I went three stations to the river Tan-gu, over which I crossed. The sources of the river are found in the Tangut country Sisia,† whence it is so called. This river flows also north-east.[15] West of the river there is a high range of mountains. The stones in the mountains are like iron. On the north side of the range there is a thick pine forest. On the southern side of the mountain there is placed the pavilion of the Prince (Khubilai). This is his summer residence.

Having waited here until the end of autumn, we moved on our journey eastward along the post road, passed the Stone Signal, and came to Hulan-tchi-gin.

Hence, we went into the depths of the mountains and hills, and sometimes went and sometimes stopped. We went not more than one station in a day, and never stopped more than two nights. Along the road we did not meet with any remarkable mountains or great rivers, and therefore there is no need to describe anything.

On the 9th day of the ninth moon (October), the Prince, having called his subjects before his chief tent, performed the libation of the milk of a white mare. This was the customary sacrifice at that time.[16] The vessels used were made of birch bark, ornamented with neither silver nor gold; such here is the respect for simplicity.

At last, in the middle decade of the tenth moon (November), we arrived at a mountain, under the protection of which we passed the winter. Here was much frost, the water everywhere strongly frozen, and all hastened to provide themselves with fuel and water before the cold came on. It was impossible to go out without fur clothing. The usual food is meat; rice is considered a precious rarity. On the last day of the year the Mongols suddenly changed their camping-ground to another place, for the mutual congratulation on the first moon. Then there was every day feasting before the tents for the lower ranks. Beginning with the Prince, all dress themselves in white fur clothing.[17] Before the chief tent they collect together for congratulation on the third day, On the last day of the first moon (February—March), we again went south-west. In the middle decade of the second moon (March), we arrived at Hulan-tchi-gin, then on the east we came to the mountain "Horse's Head," and stopped there in consequence of the thawing of the rivers. On the ninth day of the fourth moon (May), the Prince again collected his vassals before the chief tent for the libation of the milk of a white mare.[18] The vessels were the same as before. This sacrifice is performed twice a year, on the ninth day of the ninth and the fourth moons. At other periods of the year it does not take place. From this day we began to return again along the post road to the south-west, to the summer residence of the Prince.

In general the Mongols at the approach of summer migrate to high and cool places, and in the winter migrate to warmer places, which are open on the south, and where they can easily obtain fuel and water. During these periods they go from one place to another. To-day they go, to-morrow they stand still, stopping where there is water and grass. Such are the needs and customs of the country.

I was in the Prince's camp ten days altogether. At every interview the Prince was polite to me, and they provided me with tents, pillows, clothing, food, and medicine for every ill. From this it can be seen what kind feeling the Prince had for me, as I know that I am good for nothing, and without talent. I do not know why I was honoured by such attention. Probably the cause of it was the love of the Prince for good, and because, in his attention to the teachings of Confucius, he forgot his lofty position, and perhaps also he wished to entice to himself wise men. I, of course, could not be of use to him in that respect, but served only as an example, after which other men, incomparably worthier than I am, would, without doubt, come to the Prince. For this purpose I have written an account of my journey from beginning to end.

In the year Ru-shen (1248 A.D.), in the summer, on the 15th day of the 6th moon. Tchjan-de-hoi from Tai-yuania carefully wrote.

NOTES OF FATHER PALLADIUS TO THE PRECEDING NARRATIVE.

(1) Tchjan-de-hoi went to the present town of Siuan-hua-fu by a road the same as the present post road, though there is a difference in the names of the towns, which in China frequently change. The present post stations on that road are as follows:—70 *li* from Peking to Tchan-pin-tchow. 60 *li* to the fortress Tsui-yun-guan, placed in a defile, 15 *li* from the southern, and 20 *li* from the northern mouth of it. 60 *li* to the town Huai-lai-sian.* During the time of Tchjan-de-hoi it was destroyed by the Mongols. 60 *li* to the station Tu-mu-i. 60 *li* to the station Tsi-min-i. Here runs the river

* *Ulan-chiki* of Paderin.

† [*Si-hia*, according to our usual way of writing Chinese names, was the Chinese name of the Kingdom of Tangut, conquered by Chinghiz in his last campaign (see Pauthier, *Marco Polo*, p. 153).—*Y.*]

* These three places are, according to the orthography of Dr. Bushell's itinerary (more like what we are accustomed to), *Chang-ping-chou*, a walled town a little beyond the famous summer palace of Yuan-ming-yuan; *Chü-yung-kuan* or the Nan-kao Pass, where stands the splendid marble archway, with its hexaglott inscription, which is engraved at the end of vol. i. of *Marco Polo;* and *Huai-lai-hien.* The Yui-lin of the old Chinese traveller also occurs in Dr. Bushell's itinerary; as does "the rocky peak of *Chi-ming-Shan.*"—*Y.*

Yan-He, which forms a branch of the San-gan-He,* and is not the same river, as the traveller states. There is now no stone bridge over this torrent. The Desin-fu of Tchjan-de-hoi, which was then the chief city in this valley, is now the city without a district, old Bao-an-tchow.† 60 *li* to Siuan-hua-fu, called by Tchjan-de-hoi, Siuan-de-tchow.‡ The "stone staircase" is doubtless a road cut through the stone ridge which is called the "Dragon's back." 60 *li* to Tchjan-tsya-kow,§ or Kalgan. The defile of Kalgan, under the name of De-shen-kow, became chiefly known in the 14th century, under the dynasty of Ming, when a barter fair was established at its southern mouth, between the Mongols and Chinese. The word Kalgan is not now known to the Chinese. In the old Chinese-Mongol dictionaries, the word Khalga means the same as Guan-kow, that is, "the mountain passage," especially one fortified by nature or art. Consequently it is easy to recognize this Mongol term in the word *Kaluga* (corresponding to the word of like signification *Derbend*), as some mountain defiles are called in Western Turkistan.‖ Ehu-lin otherwise Ye-hulin,¶ is the old designation of the boundary range between Mongolia and China, which is now called Inshan, "Northern Mountain," or Tsin-shan, "Blue Mountain," and of the interior of the Hingan range. Among the Chinese geographers, some trace its beginning from the "Celestial Mountains," Thien-shan; others consider it the eastern extension of the mountains of Kuen-luen. In fact, it begins with the mountains of Ala-shan near the Ordos, and goes eastward to the boundaries of Mantchuria.

(2) Station Bolo, probably a Mongol name, was evidently the first in Mongolia from China. Post-roads were established by the Khan Ogotai. The post-road from the boundaries of China went to the place Yu-err-li. Further on it united all the so-called four great Hordes [*Ordos*] or residences of the Mongol Khans. Yu-err-li was probably the Southern Horde [*Ordo*]. From here one post-road went to the Eastern Horde, which was on the northern branch of the Urshun River, which unites the lakes Buir and Dalai. Another road went to the river Tola, where must have been the Northern Horde [Ordo], and which was the chief one in the time of Tchinghiz Khan. The usual road from the Eastern [Ordo] to the western, lies up the course of the river Kerelun. It again unites with the main road from Yu-err-li on the north, where the Kerelun turns to the east. From the river Tola the post-road went to the Western [Ordo], Kholin [Holin] or Karakorum, and thence to the possessions of Jagatai and further.

Tchjan-de-hoi went to Yu-err-li and the Kerelun, and thence to Tola, and from Tola to Kholin, and finally to the residence of Khubilai.

(3) Fuchow must be looked for in the ruins of the town Khara-balgasu. It is evident from the ruins that this was a city fortified in the Chinese way, with a ditch, a wall, and batteries. On the north-western corner is a prolongation for eighty paces, ending with a high *obo*. From the top you can see over the steppe for a great distance. Here, probably, was the look-out tower. Inside the wall on the north-east is a special wall. There stand the remains of the table of sacrifice. Water is brought into the ditch from the stream which runs close by. The empty town presents heaps of ruins, and is all overgrown with grass. Under the Mongol dynasty this town bore the name of Siu-he-tchen,* when it was renewed, and it kept this name until the dynasty Ming. It was also called "Little Pekin." With the constant incursions of the Mongols, the Mings at last lost it. The Mongols have a tradition that Khara-balgasu was occupied by Burni and Galdan, the defenders of Mongol independence, in their struggle with the Mantchus (*Notes during my Journey in Mongolia in* 1859).

(4) The Tchan-tchjow of Chinese history must be the present town of Tsagan-balgasu.† Inside it are many ruins. There is a stone monument, which from the lapse of time has almost entirely sunk into the ground. See the plan of Khara-balgasu and Tsagan-balgasu, made under the direction of Mr. Turbin.‡

(5) The wall exists at present. "On the 25th of June, I left Tsagan-balgasu, near which we had encamped. We went 25 versts by the side of long hills. Farther were seen chains of little hillocks, which, at a distance, seemed considerable mountains. Near them, 7 versts from the station, on going into the mountain valley, we noticed an old wall which extends from east to west. The Mongols who accompanied us called this wall Moherme [Mau-khăräm?], that is "the Bad Wall," in opposition to Tsagan-herme, that is "The White (and Great) Wall." They affirmed that it goes east as far as the sea. All the space about the wall was full of large holes. It is probable that this wall constituted the Min-tchan boundary, so-called from the name of the Emperor Min-tchan (1190 to 1195), who made here a line of defence against the incursions of the Mongol Hordes§ (*Notes of Travel in Mongolia in* 1859).

(6) It is hard to follow the traveller further. Going along the post-road at that time, he perhaps followed the easternmost of the present roads from Kalgan to Urga. Besides that, the distance of his day's journey is uncertain. It may have been, as at present, from 50 to 80 *li* or 25 to 40 versts. What he says about going six stations through thick drifting sand is not in accordance with the latest observations, and we must either not take his words literally, or else consider that the face of the country has changed.‖

Mongolian steppes in Chinese works are called without distinction, *Gobi, Han-hai, Shamo,* or as the writer has it, *Shato,* but the more careful geographers give the name of Shamo to that sandy strip of steppes which goes from the boundary of Mantchuria to Lake Lob-nor.

(7) Yui-err-po, otherwise Yui-err-li, is a Chinese name, and means "Fishy Lake."¶

By "the Princess," the traveller probably means the Princess Ghin, who was given in marriage to Tchinghiz Khan, or, perhaps, to one of his successors. According to Mongol custom in each of the four great [Ordos] there lived one of the khan's wives. In the palace at Yui-

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* *Yun-Ho*, and *Sang-kan-Ho* of our maps. Their junction forms the Hun-Ho or Yung-ting-Ho, flowing under the bridge of Lu-kyu (the *Pulisanghin* of Marco Polo), about 7 miles west of Peking.—*Y.*

† *Pao-ngan-chau*. The old name is given by Bretschneider as *Te-hing* (=the *De-sin* of Palladius).

‡ Sindachu of Marco Polo; the Hsuan-hua-fu of Bushell, *Siwan-hwa-fu* of maps.—*Y.*

§ *Chang-chia-kou* (Bushell); *Tchang-kia-kheoo* (Klaproth).—*Y.*

‖ The famous "Iron Gate" north of Oxus, between Termed and Shahrsabz, described by Hwen T'sang and by Clavijo, is often in maps called *Kohluga*, a word which I have never before found explained.—*Y.*

¶ This is written in the itinerary of Kiu-Ch'ang-Ch'un, translated by Bretschneider, as *Ye-hu-Ling*.—*Y.*

* *Hsing-ho-cheng* or *Kara-Hotun*, of Bushell, about 40 miles N.W. of Kalgan.—*Y.*

† It is the *Pai-cheng-zu* or *Chagan Balghasun* (both meaning "White City") of Bushell and others; and is, undoubtedly, the Chagan-nor of Marco Polo, one of Kublai Kaan's summer residences.—*Y.*

‡ One would be glad, indeed, to see the said plan! but how, when, and where?—*Y.*

§ *Ming-ch'ang*, in Bretschneider. This rampart is mentioned by Timkowski (I. 263). He mentions another near Chaghan Balghasun, further south, and one near Kara-tologoi, further north.—*Y.*

‖ But the traveller scarcely does speak of going six marches "through thick, drifting sand." Timkowski, on the eastern road, speaks of sandhills and sand willows, and says, under November the 7th—"The greater part of our road from the 23rd of October to this day was invariably sandy" (I. 254).—*Y.*

¶ Bretschneider identifies this with a lake in about 43° 50′, called now by the Chinese *Po-yü-rh Hai*, meaning the same, and by the Mongols *Tar Nor*. I have no map that shows it.—*Y.*

err-li, there was, perhaps, the khan's wife of the Chinese house.

The description of the palace recalls the ruins of Olon-baishin near the stony belt Busyn-tcholo. The similarity is striking, but these ruins are further north (from the station Ude 140 versts to the north-west), and if there is no mistake in the enumeration of the day's journeys in the traveller's diary, it is impossible to recognize Olon-baishin as being Yui-err-li.

"The ruins of Olon-baishin are placed to the north of the stone belt on the slope of a hill near the marshy traces of a lake which existed here. The place is surrounded by heaps like mounds, covered with huge bricks, or cut-stone slabs which were used together with bricks. The bricks are burnt black. Everywhere are strewn remnants of green pottery and bricks of various kinds. Everywhere Chinese architecture is noticeable. The chief building must have been that which had constructions on both sides, called in Chinese *err-fan* (ear rooms).

"Behind it there are remains of a building surrounded by a gallery. In front of the building a platform is raised, under which is seen a vault which goes down deep under the floor of the hall. In a line with this building to the east is another similar one, but without these additional constructions. On the west there is also a hall. In front of it there is an entrance called by the Chinese *Tchuan-tan*. Further to the south there rises a great heap of ruins, probably a tower, the height of several fathoms. Both on the east and west there is a similar building in a line with the main one. Besides this there is a quantity of small ruins and little towers in full preservation with vaults, and some with *fokans* or niches for idols. Beyond this group of ruins on the east are others, and one of them is very remarkable. On the west is another small hill, on the top of which are also ruins. In front, on the south, not far off, is the limit of Busyn-tcholo, in places planted with elms. They say that the brother-in-law of the Chinese Emperor lived here, meaning him by the name Hun-tai-tsi [Khung-taidzi].

"We were unwilling to leave the silent monuments of settled life, the remnants of those times when these steppes were not so unpeopled and unfruitful. From the north we came up to the top of the range Busyn-tcholo, where all the valley opens up before our eyes, shut in by low hills. The traces of the lakes shine in spots. Small sandy elevations in the green valley are noticeable from the clusters of acacia which bind together the soil. The slope to the valley is gentle on all sides. The valley is very large" (*Notes of Journey in Mongolia in* 1859).

(8) It seems probable that this is the mountain now called Tono: the Kerelun running from the north makes a semicircle about it so as to turn to the east.

(9) In Chinese *tu-err*. This is the river Tola. The traveller evidently did not cross over it, and went along its southern bank. He arrived at the Tola perhaps in that place, where even at present the caravans from the south pass.

(10) This town cannot be far from Urga. The Kidans [Khitans] of the 10th and 11th centuries left traces of their rule in all the countries which touch China on the north. Ruins of their fortifications and towns are met with not only on the Tola but on the Kerelun, and in Mantchuria.

(11) These were workmen of various trades, from China and Turkistan, who were settled in the north-western part of Mongolia by the Mongols.

(12) Tchjan-de-hoi speaks of the roundabout way, which was, perhaps, more convenient than the one straight to the west, which probably went over the mountains by the side of the lake.*

(13) Here was Karakorum. The author, for some reason or other, does not go into details about this residence of the Khan's, and apparently remained in it but a short time, as he was hastening on to the residence of Khubilai.*

(14) Tami is evidently the present Tamir. It is strange the author does not speak of the Orkhon, since Karakorum was on it.†

(15) It is difficult to say what is the river Tangu without geographical data with regard to these little-known places. In any case there is no river there which flows from the Tangut province, Sisia [Si-Hia] (in the north-west part of China Proper). Probably the author was led into a mistake by the name of the river.‡

(16) [A welcome illustration of Marco Polo, who lays so much stress on Kublai's practice in later days of performing this libation with the milk of the white mares, before quitting his summer quarters at Shang-tu for Peking. The period there, however, is given as the last day of the August moon; probably because the journey south could not be deferred to a later season (see vol. i., pp. 265 and 365).—*Y.*]

(17) [Another illustration (see i., p. 346).—*Y.*]

(18) [This answers exactly to William de Rubruck:—"On the 9th day of the May moon they collect all the white mares," &c. (see notes to *Marco Polo*, i., p. 272).—*Y.*]

M. MIKLUCHO MAKLAY IN NEW GUINEA.

FROM the *Ausland* we borrow the following particulars respecting M. Miklucho Maklay, the Russian traveller in New Guinea, to whom reference has, more than once, been made in our columns.

Miklucho Maklay is about thirty years of age, and was educated first at St. Petersburg, after which he studied medicine at Heidelberg and Jena. He subsequently journeyed through Spain and Italy, and undertook a scientific trip to the Canary Isles in company with Professor Häckel. On his return he devoted himself to studying natural history and anthropology, and visited Abyssinia and the shores of the Red Sea. On regaining St. Petersburg he attracted the notice of men of science, and, thanks to the influence of the Grand-Duchess Helen, was supplied with the means for a journey to New Guinea. Maklay was attracted to Astrolabe Bay, a recess in the north-

* I do not understand this note of Father Palladius. This lake, *Vuvuge-Nor*, from which went a road S.W. 100 *li* to Holin or Karakorum, is the Ugei-Nor of Mr. Paderin (see *Geographical Magazine* for July last, p. 138). And the Khitan town at Khadassan of Mr. Paderin corresponds to Bilihedu of the text. In the place just quoted the printer has converted the specification of Mr. Paderin's arrival at Ugei-nor on his eleventh march (or day's journey) into "the 11th of March."—*Y.*

* It does not appear that he went to Karakorum at all. We see from Paderin that it lay off the road apparently followed by both travellers.—*Y.*

† Surely the river *Holin* is the Orkhon? The mountains called *Horse's Head* and *Red-Ear* still bear those names (*vide loc. cit.*, pp. 137 and 138).—*Y.*

‡ Apart from the misconception about Tangut, the general topography seems tolerably clear, after tracing Mr. Paderin's route. The "Black Signal" must be somewhere about his *Kuren* (on his 17th day's march in the itinerary given, *u.s.*, p. 137), and the *Tan-gu* River flowing north-east must be one of the tributaries of the Selenga, touched or crossed by Paderin; such as the *Khanui* or the *Chilutu*. The high range of mountains west of this is that shown as *Kangai* on the sketch map which I have attached to the account of Paderin's journey, and which forms "the watershed which divides the basin of the Selenga from that of the Dzungarian lakes" (*ib.*, p. 137). This range is represented as a prolongation of that called by the Mongols *Tannuōla*, which may possibly have to do with the name Tan-gu and the mistake about Tangut. And Prince Kublai's summer residence in those days, before he had moved eastward to "Xanadu" and "Cambaluc," must have been on the southern slopes of the range, somewhere near where Paderin crossed it on his way to Uliussutai.—*Y.*

east coast of unknown dimensions, which had been discovered in 1825 by the French Admiral, Dumont D'Urville, but which he had not had time enough to examine. Here Maklay hoped to light upon aboriginal Papuans of a purer breed, noticeable for a peculiar type of cranium and for curly hair. Through the help of the Grand-Duchess he obtained a free passage on board of the screw corvette 'Vitäs,' and left Russia on the 27th of October 1870. After doubling the southern extremity of South America, the Pacific was crossed, and at Samoa, one of the Navigator Islands, Maklay obtained the services of a Swede named Wilson and a Polynesian lad as servants. In September 1871 the corvette entered Astrolabe Bay, in New Guinea, and found that it extended for about 8 miles only inland. At the further end a protecting row of breakers formed a harbour, and Maklay, accompanied by his two servants, sprang, unarmed, into a boat, and was quickly rowed to shore. In spite of his friends' earnest dissuasion he penetrated into the forest, whither the natives had fled in terror, but it was not without difficulty that he prevailed upon two to accompany them, and those, on coming in view of the vessel set up such a shrieking that he was fain to let them go. A neighbouring village was quite empty; all the inhabitants having taken to their heels. The place, however, seemed to please Maklay, and a space having been cleared of the ironwood and other trees encumbering it, a hut was erected for him, and at the end of a week everything was ready, not forgetting a series of mines round the hut, which could be fired from the outside in case of a seizure of the premises during the absence of the tenants.

A few days afterwards, at daybreak, a procession of natives came down to the shore and brought some presents, including a dog and a porker, some bananas, cocoa-nuts, sweet potatoes, and other fruits. This token of friendship was accepted by the Russians, and in return they deposited some pieces of red calico, pearls, gold paper, empty bottles, buttons, and similar articles. But though the savages returned to bring fresh presents, they forbore, with a delicacy which would be incomprehensible among civilized nations, to touch the Russian gifts. On one occasion some of the ship's officers fell in with some natives, and after pacifying them, made them understand by gestures that Maklay proposed to remain in the country, to which the men replied that he would be eaten if he did so. The villages were then visited, and endeavours made to come to some arrangement, but in vain, for the inhabitants had all decamped. Maklay related subsequently that these domiciliary visits were the cause of much unpleasantness being shown to him, for in that country there are neither locks nor doors, and it is reckoned an unpardonable affront for even a father to cross his son's threshold in his absence.

The day of departure now drew near, and on the 9th of September, Maklay, after attending divine service on board, bid farewell. A salute of twenty-one guns was fired, which drove off the natives to the mountains, from whence they dared not emerge for days, and the corvette sailed away, leaving Maklay in a very shaky state of health.

A year passed by and nothing was heard of Maklay, till, in September 1872, an English journal announced that a whaler had visited the bay and had seen no trace of him or his hut. This piece of news alarmed his friends in St. Petersburg, and the ship 'Izumrud' (*i.e.* 'Emerald') was despatched in search. An officer who had been on board of the 'Vitäs,' accompanied the expedition, but no sign of Maklay could, for some time, be seen. Suddenly an officer spied through the glass a Russian flag on a tree, and exclaimed that Maklay must be alive. The ship was accordingly brought inland, and Maklay was soon discovered sitting in a canoe with three natives. A boat was put off and he was brought on board, and then, for the first time, the Russians saw the deplorable condition of their countryman. Though young in years, he appeared as weak and tottering as an old man; his face was seamed with wrinkles, which bespoke his sufferings and ailments; his body and limbs were in wounds, and his clothing in rags. He was forthwith provided with necessaries, and enquiry was made for his servants. Maklay replied that the boy died three months after their arrival, and that Wilson was then lying almost at the point of death, he having rallied slightly on being told by the natives that they saw smoke issuing from the sea, and being assured by Maklay himself that it must be a Russian vessel. Wilson was of course fetched on board immediately, and every care taken of him.

For five days the 'Izumrud' lay at anchor, and several natives, with Maklay for an escort, mustered up courage to visit her. In deference to the Russians they appeared in European garb, but their costume created much amusement. For instance, one appeared in a cocked-hat and sailor's shirt; a second preferred his traditional nakedness, while a third lent striking variety to the group by figuring with nothing on but a highly-ornamented, old-fashioned, officer's tail-coat. The visit, however, went off pleasantly enough, and the Papuans returned dancing and singing to their homes. A little misunderstanding was unluckily created on the occasion of a second visit, by the sudden appearance on the scene of a live ox which was kept on board. The horns of the beast struck the most abject terror into the breasts of the Papuans, who immediately sprang overboard and swam to land. Before the departure of the vessel, however, they brought their wives and children, and showed the Russian officers their villages and houses. On the day of departure they entreated Maklay to return soon to them, and on his being compelled to refuse, set up a sort of funeral dirge, accompanied by drums—an honour of an exceptional character usually paid to deceased chiefs.

Maklay related that the same day that the 'Vitäs' left, the savages surrounded his house in great numbers, and with loud cries, keeping outside the circle of mines. On his pursuing his avocations, however, as if nothing was the matter, they began to disperse. His first overtures of friendship were made in the vicinity of his house (which he durst not leave for fear of being plundered), and after an exchange of cocoa-nuts, sweet potatoes, and pieces of roast meat, for strips of red calico or sham pearls—knives and articles of greater value Maklay only parted with on very rare occasions for large accessions to his collections. He then visited their villages, having previously signified his approach by a shrill whistle, which gave them time to conceal their women and children.

After three months Maklay had the misfortune to lose his boy, and being unable to dig a grave for him, the body was put into a sack, and with a large stone tied to

it, consigned to the deep. He was anxious that the Papuans should not see this, as they would no doubt imagine that he had killed him. It was a dark night that he chose for the task, but he could nevertheless descry a large number of natives at a distance, engaged in fishing by torchlight, but the report of a gunshot effectually frightened them away.

With reference to the manners and customs of the Papuans, Maklay makes mention of music, song, games, and dances as forming an important part of their festivals, and of the rites attending funerals and marriages. In December, when the fruits ripen and everything is in abundance, a grand festival lasting several weeks is held. The sight of 500 or 600 men, each bearing his own stock of fruit, his musical instruments and weapons, and decorated with gay feathers, is very picturesque. At night-time an open space is chosen, and a huge fire lit in the centre. Round it group themselves a number of men with instruments; outside of them a second line with weapons of various sorts, then come the women, and, outside of all, the children. They then commence dancing, and continue the same for several hours till overcome by fatigue. Song then commences, and the sport goes on till morning. Their musical instruments comprise large and small drums (some, which are 10 to 12 feet in length, can be heard on a calm day at the distance of 4 or 5 miles), horns, whistles, species of harmoniums, made by joining together a number of bamboos, and conch shells.

Except during these festivals the natives lead a very quiet life. Strangers are hospitably treated and dismissed with presents. The occupation of the men is hunting, fishing, and preparing weapons; that of the women tilling the ground, gathering wood, and looking after the house. Fish are transfixed by arrows, in the shooting of which, as well as of lances, the Papuans show great dexterity, being able to drive a lance 2 inches deep into a tree at 40 paces.

The wild boar are hunted down by setting fire to the jungle around them and spearing them as they rush out. Hunting is followed by a grand feast, after which sham fights between two sections of a tribe are not unfrequently got up. The only vegetable which requires cultivation in this productive country is the sweet potato or *taro*.

The Papuans have a curious custom of preserving the lower jaw of skeletons and throwing away the upper portion of the skull. Maklay was thus unable to get perfect craniums, which he was especially anxious to obtain for Professor Baer of St. Petersburg; but Dr. Meyer, in his recent travels in the west of the island, has been more fortunate, and he will thus very probably be able to throw light on the ethnology of some of the races.

Maklay has rendered important service to future travellers by compiling a vocabulary of no fewer than 800 Papuan words, of the correctness of which he has fully satisfied himself. They can only count up as far as six, and in some villages in the interior three is the limit of their arithmetic.

The great mistake in Maklay's arrangements had been want of forethought as regards provisions. The officers of the 'Izumrud' had left him with a stock for three months, but during the year of his sojourn he was so often down with fever that he could not replenish his stores by hunting. Salt and tea both ran short and proved a great loss, though he found a substitute for the former in the ashes of drift-wood thrown up by the sea. A more serious calamity was the diminution in their stock of quinine, which Wilson, the Swede, continually stood in need of. On the arrival of the ship they had both run completely out of this indispensable medicine.

From New Guinea, Maklay journeyed to the Moluccas and the Philippines, thence to China, where Wilson was landed; from thence on to Batavia, where, in May 1873, he settled down in the Viceroy's town to recruit his health and arrange his collections. Towards the end of that year the Dutch Government began to make arrangements for an expedition to New Guinea, and Maklay hoped to join it, but the war in Achin unfortunately put a stop to the scheme. But Maklay has not been deterred from his determination to revisit the island. When Captain Moresby visited Macklay at Amboina, in June last, he found him in a most deplorable state of health, but his spirited resolution to prosecute further discoveries were most striking, and could not but win Captain Moresby's admiration. Latest advices state that he determined to visit the Malay peninsula, in November last, where in the interior mountains he expects to find a race called Semang, to which ethnologists have ascribed a Papuan origin.

NEW GUINEA.

In our number for December 1873 (facing page 361) we gave a map of Captain Moresby's discoveries at the east end of New Guinea, made in April 1873, and some account of these discoveries will be found in the report of the Proceedings of the Geographical Society at page 392 of the same number.

We have now to report the additional work done by H.M.S. 'Basilisk,' under the command of Captain Moresby, in 1874. Lieutenant Llewellyn Dawson was appointed to the 'Basilisk,' as surveyor, and she proceeded to the scene of her former discoveries in February 1874. An accurate trigonometrical survey was then made of the east end of New Guinea, and of the islands lying off it. This more detailed examination proved that the true gateway from Australia to China was not the deep strait ("China Strait," on the map) previously discovered, but a much wider passage to the east of Moresby Island. The 'Basilisk' then made a running survey of the previously unknown northern coast of New Guinea, from the eastern extremity to Astrolabe Bay, a direct distance of 450 miles. She was occupied on this service from February to May 1874, and then returned to England. Lieutenant Dawson's trigonometrical survey of the eastern end has been received at the Hydrographer's Office. The first sheet of the northern coast of New Guinea has also been sent in, and the rest will follow in about two months. Captain Moresby will read a paper on his New Guinea discoveries at a future meeting of the Geographical Society; and we do not doubt that he will receive due recognition of the important services he has performed from Her Majesty's Government.

Reviews.

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LIVINGSTONE'S JOURNALS.*

IT is now a quarter of a century since David Livingstone discovered lake Ngami and, through the appreciative action of the Geographical Society, became known to the world as an African explorer. When at last he returned to England, some years afterwards, he was famous throughout the civilized world, and the man who had marched from lake Ngami to St. Paul Loando, and thence, across Africa, to the shores of the Indian Ocean, was recognized as one of the greatest travellers in modern times. But he aspired also to be the founder of a new civilization among the tribes he had discovered in the valley of the Zambezé, and in this attempt he failed. He was wanting in some necessary qualifications for such a task, and, in 1864, he returned to England a disappointed man, without the means to resume either the work from which he had been recalled, or his older and more congenial labours. It was then that his true and constant friend, Sir Roderick Murchison, conceived the idea of Livingstone's last great journey, and it was entirely through the efforts of the President and Council of the Geographical Society that the plan for exploring the drainage of Central Africa was matured, that the funds were procured, and that the traveller received consular rank.

Thus, in the evening of his life, was the great explorer enabled to resume the career which was most congenial to him. He went forth alone to die among the people he had loved so well, and for whose welfare he had devoted his life. He landed at Mikindany on March 24th, 1866, and from that day until his worn-out spirit found rest in the swamps of the Bangweolo, seven years afterwards, he continued to wander over the African wilds, influenced by two objects, the desire to add to the sum of human knowledge, and to ameliorate the condition of the African race. From the pursuit of these objects nothing, neither sickness, nor pain, nor hunger, nor poverty could turn him, and in their pursuit he nobly died. But in his last journey of seven years much of his former vigour and force of character were gone. The spirit nothing could change nor turn aside, but the physical power could no longer bear the strain. It is not so much for the value of the geographical results that his journals should be prized, as for the glorious example they furnish of single-minded devotion to a great cause.

Livingstone's last journeys, as regards the exploration of new regions, may be divided into four parts. The first, which occupied four months, from April to August 1866, includes the route from the Rovuma River to lake Nyassa. The second refers to the basin of the Chambezé and the Lualaba, in which Livingstone wandered for twenty-two months, from January 1867 to October 1868, and to which he returned to die in 1873. The third relates to lake Tanganyika. The fourth comprises the twenty-seven months from July 1869 to October 1871, during which he was in the Manyuema country.

The first part occupies the first hundred pages of Livingstone's journal; and in some respects it is the most important. It is over an entirely new country through which a route, much used by Arab slave-dealers, leads from lake Nyassa to the sea, down the valley of the Rovuma. Livingstone's own original map of this route was left at Ujiji, and has been saved through the devoted gallantry of Lieutenant Cameron. The mountains to the east of the lake rise to a height of 3400 feet, and are well peopled, the fields being regularly irrigated and cultivated with maize, cassava, tobacco, and English peas introduced by the Arabs. These mountains are described as composed of granite and other primitive rocks, rising up in the form of rounded hills, and they must have a climate which would not be injurious to European residents. So that the use of this route, discovered by Livingstone, may hereafter be the means of extirpating the Rovuma slave trade.

Livingstone crossed the mountains of Muchingwa and entered the valley of the Chambezé in January 1867; but he was not its discoverer. This part of Africa has frequently been traversed by Portuguese traders and explorers, by Pereira, the Pombeiros, Lacerda, Pinto, Monteiro, Gamitto, and others; and it is much to be regretted that Livingstone was only acquainted with the work of his predecessors through inexact references to them by English geographers. For Lacerda was a man of scientific culture upon whose observations reliance could be placed. He was aware of the existence of lake Bangweolo, which, indeed, Pereira had actually crossed;* and he knew that the Chambezé fell into the river which flows past Cazembé's (the Luapula).† In fact his account of the hydrography of this part of Africa is quite correct. Yet Livingstone says—"The Portuguese crossed the Chambezé some seventy years before I did, but to them it was a branch of the Zambezé and nothing more. Cooley put it down as the New Zambezé, and made it run backwards uphill:" and he goes on to say that, misled by the similarity of names and maps, he thought it was an eastern branch of the Zambezé, and that it took him twenty-two months to find out his mistake, the chief Cazembé being the first to throw light on the subject. This is surely the most melancholy instance of waste of time on record; caused by ignorance of former work. Livingstone mentions Mr. Cooley's name as if he was a Portuguese himself, and not the channel through which Livingstone derived his inexact knowledge of the Portuguese work. Had the English explorer read the narrative of Dr. Lacerda he would have known, before he crossed the Muchingwa Mountains, that the Chambezé was not an eastern branch of the Zambezé, but that it flowed west and then north past Cazembe's town, facts which it took him twenty-two months to ascertain. The truth is that Mr. Cooley, in 1845, did show the Chambezé (New Zambezé of Lacerda) flowing in the wrong direction; but he corrected the mistake in 1850.‡ It is on Livingstone's own map of 1856 that this river is made to flow up hill. All this required explanation, and careful editing; or else the passage should have been omitted. One

* *The Last Journals of David Livingstone in Central Africa, from 1865 to his death.* (Edited by Horace Waller, Rector of Twywell, Northampton.) 2 vols. Murray, 1874.

* *R.G.S. Trans.*, p. 100.

† *R.G.S. Trans.*, pp. 51, 94

‡ See the review of Mr. Cooley's labours at p. 245 of our September number. We were not then aware that Mr. Cooley had corrected his mistake as to the course of the Chambezé soon after his first map appeared.

very necessary duty of an editor of Livingstone's Journals would have been to explain the exact state of the case as regards both the Portuguese discoveries in the Luapula basin,* of the true character of which Livingstone was ignorant, and Mr. Cooley's position with reference to them. Instead of this the whole subject is left in its original state of confusion, and the editor, endeavours to give the impression that Mr. Cooley left a mistake unaltered, which in reality he had corrected a quarter of a century before. This is but one instance of the careless and inexact way in which the Journals have unfortunately been edited.

Lacerda crossed the Muchingwa Mountains, which divide the basins of the Loangwa and Chambezé, in 1798. Gamitto and Monteiro followed in 1831, and described the magnificent scenery with enthusiasm. Livingstone crossed them in January 1867. Up to this point, and especially as regards the place called Mazavamba on the Upper Loangwa, Livingstone's work fits in admirably with that of Lacerda. He describes the mountains as 5300 feet above the sea, with peaks rising to 6600 feet, and as composed of a beautiful white and pink dolomite. The country, on the northern side, is a succession of enormous waves covered with forests, the ravines containing gigantic timber trees and bamboos. There is considerable moisture, owing to the prevailing winds being from the south-east; and Livingstone tells us of people, in these mountains, living on mushrooms, of which five kinds are considered edible, and ten are rejected. The descent from the mountains to the banks of the Chambezé is through unbroken dark forest, covering a district called Lobisa. The river was crossed some distance to the east of the point selected by Dr. Lacerda, and Livingstone thence travelled north, and, leaving the Luapula basin, entered the watershed of the Tanganyika. The Portuguese, in their journeys, had continued in the basin of the Luapula until they reached Cazembé's town. Livingstone, after visiting Liemba, the southern end of lake Tanganyika, returned to the Luapula basin at Itawa, a point further to the north, in the territory of the chief Insama, whose people he describes as handsome, with European features and finely formed heads. He travelled thence to lake Moero over a country consisting of granite hills covered with trees, 3350 feet above the sea, intersected by beautiful valleys. In November 1867 he reached lake Moero into which the Luapula falls, and which he describes as a wide expanse of water, with sandy beaches skirted by a belt of tropical vegetation, and flanked by ranges of mountains. The lake is 50 miles long and 3000 feet above the sea. He was told that the lofty dark range on the western shore was called Rua (Urunwa of Burton), and that a river called Lualaba flowed out of the north end of the lake. Travelling south, along the east side of Moero, he crossed the river Kalongosi flowing into it, where it was rapid and 60 yards wide, and entered the Lunda territory of which Cazembé was chief, and which had several times been visited by Portuguese traders and explorers. Here he came upon a place where he was told that Dr. Lacerda died. The accomplished Portuguese explorer died on October 18th, 1798. The place pointed out to Livingstone is on the banks of the river Chungu, near the point where it empties itself into lake Moero. There is some confusion here, and the journal needed careful annotation, which it has not received. Livingstone's Chama is certainly not the Chama of the Portuguese (Moiro Achinto), the position of which was fixed by Lacerda.

The region between the Muchingwa Mountains and lake Moero appears to be a lofty upland from 4000 to 6000 feet above the sea, with numerous streams and rivers, and morasses which Livingstone calls "sponges," and which, when super-saturated, give rise to inundations. The great lake Bemba or Bangweolo in the southern part of the plateau, seems to be little better than a vast marsh margined by a broad belt of rushes, surrounded by a flat country, and containing low islands of some size, inhabited by fishermen. Lake Bangweolo was discovered and crossed by Manoel Caetano Pereira in 1796, and Dr. Livingstone reached its shores in July 1868, and was paddled over to two of the low islands, called Mpabala and Lifunge. He conjectured the length of this great expanse to be 150, and the breadth 80 miles. Neither Lacerda nor Livingstone ascertained the connection of the lakes Bangweolo and Moero by personal inspection; but both received positive testimony of the fact, about which there can be little doubt. Pereira, however, is said, by Mr. McQueen, to have descended the Luapula in a canoe from lake Bangweolo to Cazembe's, and to have proved the northerly course of that river. The Pombeiro Baptista, in 1806, crossed the river Luapula between the two lakes, at a point where it was 57 fathoms in width; and it was crossed in May 1873 by the returning party of Dr. Livingstone's servants, after his death, at a point close to where it issues from lake Bangweolo.

During the latter part of his sojourn in the Luapula region, Dr. Livingstone was too ill to collect much information, and he prepared no map of his route from lake Moero to Tanganyika. He heard of some strange underground dwellings in the country of Uruwwa, and of the rich copper mines of Katanga, but illness prevented him from visiting them. He had fallen in with parties of Arab slave-traders who, when his own resources were exhausted, treated him with the utmost hospitality and kindness. To one of them, Muhammad Bugharib, who accompanied him to Ujiji, he owed his life. This good Samaritan continued his benevolent offices for many months, and indeed Livingstone appears to have been practically the guest of the slave-traders during the journeys that he subsequently made in the Manyuema country.

The third portion of Livingstone's work is that which relates to lake Tanganyika. In 1868 he reached the south end of the lake, there called Liemba, which he describes as a deep basin, with sides nearly perpendicular and covered with trees. The rocks are a red argillaceous schist, down which pour several cascades. Large rivers, rising in the same range as the Chambezé, flow into the lake, and on the more level spots round its margin there are herds of elephants and antelopes. The village of Pambete, on the shore of the lake, is surrounded by palm-oil trees. Here Livingstone got a single set of lunar observations which gave him a longitude of 31° 57′ E. The latitude was 8° 46′ 54″ S., that of the north end of Tanganyika

* For a general account of the discoveries of the Portuguese, see *Ocean Highways* for September, 1872, p. 172, and our review of Captain Burton's translations for the Geographical Society, in the number for November 1873, p. 330.

being 3° 18′ 3″ S., which gives a difference of 329 miles. Livingstone gives the height above the sea, at Pambete, at 2800 feet.

On the 14th of February 1869, while very ill and under the escort of Muhammad Bugharib, and his slave caravan, Livingstone again reached the shore of lake Tanganyika, at a point on the west coast some distance to the south of Ujiji, and embarked in a canoe on the 26th. His voyage is worthy of close examination, as he appears to have passed the outlet of the lake without knowing it. On the first day, after seven hours paddling, he landed and slept at a place called Katonga. On the 27th, a pull of two hours brought him to Bondo or Thembwé, the shore being rough and covered with vegetation. Here he was delayed owing to a high sea on the lake; and on the 3rd, 6th, and 7th, he touched at places called Toloka, Uguha, and Kasanga island (Kasenge of Burton). The voyage of the 7th took fourteen hours with a head wind. The Kasenge group, consisting of seventeen islets, was discovered by Captain Speke. Livingstone visited two of them, called Kasanga (Kasenge) and Kibizé (Kabizia of Burton). The only remark made by Livingstone, of geographical interest, during his voyage, is that "Tanganyika has many deep bays running in four or five miles. They are choked with aquatic vegetation, through which canoes can scarcely be propelled. When the bay has a small rivulet at its head the water in the bay is decidedly brackish, though the rivulet be fresh; but as soon as we get out of the shut-in bay or lagoon into the lake proper the water is quite sweet, and shows that a current flows through the middle of the lake lengthways." In the following July Livingstone crossed lake Tanganyika on his way to the Manyuema country. He remarks that if it were not for the current the lake would be salt, like the shut-in bays; but this is a misapprehension. The lake is not salt because it has a river flowing out of it. On July 13th he crossed the lake, where it was 30 miles broad, to Kasenge islet, and thence to the western shore. He describes a current as sweeping round this islet from N.E. to S.E. and carrying trees at the rate of a knot an hour in spite of the wind; but he adds that the wind sometimes causes the current to go southwards.

Of the places mentioned by Livingstone, Burton and Speke, on their map, give Thembwé to the south, and the islets of Kasenge, and Kabizia. This group was explored by Speke in March 1856, and is fully described in Burton's *Lake Regions of Equatorial Africa*.* In the nomenclature of the islets, as elsewhere, the carelessness of the editing of Livingstone's journal is inexcusable. The Kasenge of Burton and Speke is given as Kasanga (ii., p. 5), Kasengé (ii., p. 19), Kiséngé (ii., p. 20). Again, in the case of a river in Manyuema, we find *Mabila* at p. 149, and *Machila* at p. 259. After landing, Livingstone crossed the *Logumba* about 40 yards wide and knee deep, which, he says, was running with a rapid current, between deep cut banks, into the lake. Yet a few pages further on, he says that the *Longumba* is probably the outlet of the lake. Then at p. 22, he says that the Logumba and Lobumba rise in the same hills, the Logumba falling into the lake, and the Lobumba being the Luamo. Again, at p. 154, he says that the Lobumba flows into the lake. There is apparently confusion in all this, due, we suspect, to careless editing.

In November 1871 Dr. Livingstone made his trip to the northern end of the lake, a portion which had already been explored with some thoroughness by Burton and Speke in April and May 1856. The conclusion was the same on both occasions, namely, that the Rusizi River, at the extreme northern end, flows into the lake, Livingstone says, at the rate of 2 miles an hour. His observations had long been valueless, as regards altitudes or distances of heavenly bodies, in which time formed an element, for he afterwards found that, on November 14th, he was 21 days out of his reckoning.*

The fourth and last portion of Livingstone's explorations is comprised in his visit to the region to the west of lake Tanganyika, which he calls Manyuema, in the company of the Arab slave-dealers. During this period he was very ill, and quite unequal to the task he had undertaken. Admiration at the pluck and energy of the brave veteran is necessarily mingled with regret that he should have been exposed to such hardships and trials, when no adequate result was possible. Livingstone describes the country as a succession of undulating hills, covered with forest, and with miles and miles of cassava. The route was generally along ridges of hill ranges, with deep valleys on either side. Many villages were dotted over the slopes, surrounded by gigantic trees. Bambarré, in Manyuema, where Livingstone was detained for so many weary months, is about 160 miles west of lake Tanganyika, and at a lower elevation. Beyond this station there is a beautiful mountainous country. Palm-trees crown the heights, climbers of cable size hang from the huge branches, and strange fruits and birds were observed. It was a newer and more tropical country than had yet been seen. The people cultivate largely, and the soil is rich, but each village is at war with its neighbours, and there is no general government. The country is drained by a river called the Luamo, which was 200 yards wide where Livingstone crossed it. In 1870 he made a journey due north, through dense forest and rank jungle grass, in pouring rain, and describes a living vegetable bridge over a river, consisting of glossy-leafed grass closely felted together. His slave-trading companions pushed still further to the north, and reached the Balegga Mountains, the position of which has been already discussed in this journal.† In March 1871 Livingstone, in company with another gang of slave-dealers, reached a place called Nyangwe, on the banks of a great river, which he calls the Lualaba, and conjectures to be the same as that which (he was told) flowed out of lake Moero. He also heard of a large lake between Moero and his position at Nyangwe, called Kamalondo. He describes the river at Nyangwe as 8000 yards broad, and with a depth of from 9 to 20 feet near the banks. Here a great *chitoka*, or market, was held, and the Arabs, apparently to strike terror, committed a horrible massacre among the market people. This was followed by Livingstone's retreat, who was mistaken for one of the slave-dealers, and attacked from ambuscades on his march. He returned to Ujiji on October 23rd, 1872.

* *Royal Geographical Society's Journal*, xxix., p. 245.

* Vol. ii., p. 169.

† *Ocean Highways*, November 1872, p. 246.

The most remarkable fact in natural history, observed and recorded by Livingstone, is the existence of large authropoid apes, called *soko*, so near the eastern coast of Africa as the Manyuema country. The range of the chimpanzees southwards is believed to terminate with the Congo, but Dr. Schweinfurth has already reported their occurrence as far to the east as the Niam-niam country, and the upper waters of the Bahr-el-Ghazal; and Antinori and Piaggia also mention having heard of them in the same region. Dr. Sclater, in a former number,* showed that they were not confined to the West Coast, but that they were met with, in dense forest, between 5° N. and 5° S., and as far into the interior as 29° E. longitude.

After his Manyuema expedition Livingstone, as is well known, returned to Ujiji, went thence to Unyanyembe, and then set out alone on his last fatal journey. We ought not to regret that the great explorer should thus have sacrificed his life, for the whole of it formed a bright example of unswerving devotion to a noble cause; and the mode of his lonely death, in the midst of his discoveries, was its very fitting conclusion.

One great cause of congratulation is that the maps and journals arrived safely in England, after so many risks and dangers. The larger portion of the journals, copied out fairly, was sent home by Livingstone himself, from Unyanyembe. The maps and other documents were brought from the place of his death, together with his body, in the face of great difficulties, by his brave and faithful negro servants. Their safety is ultimately owing to the disinterested zeal of Lieutenant Cameron, who had reached as far as Unyanyembe on his way to succour Livingstone, when the body arrived. He supplied the servants with the provisions which enabled them to reach Zanzibar. He also himself pushed onwards to Ujiji, and saved two pocket-books, and another important map.

It is unfortunate that these valuable documents should not have fallen into more competent hands. It was most important, both to the memory of Dr. Livingstone himself and to geographical science, that a learned and careful editor should have been selected. The notes were jotted down in pocket-books and even across scraps of newspaper. No word of explanation, no wish could any more be added by the writer—all must be trusted to the learning, the good feeling, and the loving care of the editor. For there was much to explain before these journals could be appreciated by the general reader. There should have been concise but comprehensive accounts, in their proper places, of all that was previously known of the Rovuma, of lake Nyassa, of the Portuguese journeys through Cazembé's country, and of lake Tanganyika; and there should have been footnotes explaining many points, and referring the reader to all previous mention of the various peoples and places. Instead of any commentary of this sort, which was very necessary, we are introduced to a new method of editing which we trust will be the last of its kind. The footnotes are confined to such pieces of information as that *bhang* is a species of hemp! or that a *dhow* is a vessel of the Indian Ocean, while the editor's chief work consists of remarks inserted throughout the two volumes, at very frequent intervals, in the same type as the journals, with nothing to distinguish them but small brackets. These remarks often interfere with the thread of the narrative. Thus, when the reader is in the midst of Livingstone's interesting account of the descent from the Lokinga Mountains, he suddenly finds himself plunged into a notice of Messrs. Lewin and Co.'s commercial transactions in beads, and he becomes aware that the editor has forced himself to the front. Again, when following with close attention the brave explorer's advance into Manyuema, he is interrupted by two pages of statistics on the ivory trade, intruding, in the same type, between the author and his reader. This is tiresome enough, but the frequent interruptions become seriously objectionable when they take the form of telling the reader what passages he is to admire, and at what particular points his sympathy or admiration are to be excited. For instance, when Livingstone writes a few earnest lines on the spirit of missions, the reader is not allowed to peruse it in peace, but must first be stopped by an introductory platitude from the editor. This sort of thing at last becomes a serious annoyance, which is increased by the way in which the most ordinary editorial duties are set on one side. Thus Livingstone is made to say that he saw "a species of *Ficus Indica*."* He may have seen a species of *Ficus*, or a variety of *Ficus Indica*, but such simple corrections as these have been neglected throughout. The work is not provided with an index, which is a serious drawback; and the journals have not been collated with the previous letters of Dr. Livingstone, which have been published in the *Proceedings of the Royal Geographical Society* and elsewhere. These letters contain several particulars, some of them of considerable importance, which are not found in the journals as now published. For instance, we find no allusion in the journals to the lake into which the Lualaba falls below Nyangwe. The consequence is that the present publication does not even represent all the information that has been received from Dr. Livingstone, and is thus an incomplete record of his labours.

The great editorial fault, however, is one of omission, and one which Dr. Livingstone would have regretted. All the world knows how much the great explorer owed to Sir Roderick Murchison, and how deep was the friendship between the two men. If Livingstone had lived it cannot be doubted that any book he published would have contained an expression of that friendship, and some account of the action taken by Sir Roderick and the Geographical Society, in originating and maturing the expedition. Yet it will scarcely be credited that the name of Murchison is not once mentioned, either in the introduction, or in any one of the numerous notes in the text. The venerable President of that Society, with which Livingstone's labours were so intimately connected, is entirely ignored, as is the Society itself. It is beyond the power of Mr. Waller to efface the memory of that connection, or of the friendship between Murchison and Livingstone, and in proof of this our review cannot end better than with the touching sentence which Livingstone wrote, when he heard of Sir Roderick's death: "Alas! alas! This is the only time in my life I felt inclined to use the word, and it bespoke a sore heart: the best friend I ever had—true, warm, and abiding—he loved me more than I deserved: he looks down on me still. I must feel resigned to the loss by the Divine Will, but still I regret and mourn."

* See *Ocean Highways* for November 1872, p. 241.

* Vol. i., p. 242.

THE DUTCH NORTHERN COMPANY.*

ON the 24th of July 1873, a Gold Prize Medal was awarded, by the Provincial Utrecht Society for Arts and Sciences in the Netherlands, to Mr. S. Muller, Fz., for his history of the Northern Company, written in answer to the following prize question: "A historical review of the Dutch discoveries in the Arctic Regions, and of their establishments on some points, especially on Spitzbergen, and also of the international disputes of the Republic of the United Provinces with England, Denmark, and Sweden, about the navigation and fisheries in the Northern Seas."

Mr. Muller's book, published by the above-named Society, does not give a full answer to the first part of the prize question, because it deals only with the Dutch discoveries up to 1642, and with the difficulties of the Northern Company during the time of its existence from 1614 till 1642, when the whale-fishery consisted only of what was called the shore-fishery. During that first period few discoveries were made. Generally the ships went in May straight to Jan Mayen Island and the west coast of Spitzbergen, principally to Smerenburg on the Amsterdam Island at the N.W. corner of Spitzbergen, where they stayed till the end of August to catch "whales and other monsters," which were at that time very abundant there; but which, after a few years of havoc and slaughter, were frightened, and at last nearly disappeared from those places, where the company had, or pretended to have, exclusive fishing rights. For this reason the whalers were obliged, after 1642, to follow the whale, and to search for him in every corner of every island, and at last in the open sea and in the ice.

This was the second whaling period, beginning in 1642, and continuing till the end of the 18th century. It was during the latter period that the greatest number of Dutch Arctic discoveries were made, which have been laid down by the two Van Keulens in their charts.

The Provincial Utrecht Society asked for a historical review of all the Dutch discoveries in the Arctic Regions, and not only of those made before 1642. Therefore, we may look upon Mr. Muller's book as being the first part of the answer to the Society's prize question; but, notwithstanding this, and that we hope hereafter to receive from him the second part of the answer, we fully concur in the opinion of the Provincial Utrecht Society that the history of the Northern Company, of which there are no papers found in any of the well kept archives in the Netherlands, has been compiled with much industrious care and patient research, and after a laborious comparison of a great number of MS. State papers with old and modern publications, which have been minutely scrutinized and submitted to an intelligent criticism; and that such a work, by which new light is thrown over a great field of Dutch activity in former times, has well deserved the award offered by the Utrecht Society.

It is a very interesting book, giving a clear insight into all the concerns and motives of action of the Northern Company. In the first place we find, in the introduction, a historical review of all the Arctic discoveries before the 17th century, which we remember so well from the articles in Mr. Clements R. Markham's "Threshold of the Unknown Region" in *Ocean Highways*.

In the first chapter there is a review of the different Arctic voyages undertaken by the Dutch from 1565 to 1613, of which the principal is that made in 1596 by Barents and De Ryp. The instructions given to Barents by the States General, and signed T. van Oldenbarnevelt, is given in the appendix of the work.

Here we wish to make a simple remark: it is this—We do not believe that either Barents or De Ryp ever circumnavigated Spitzbergen.

To us it is plain that, while in company, they both discovered the N.W. point of Spitzbergen, and came down along the west coast, and that, after returning to the south of Spitzbergen, they separated. Barents went to Novaya Zemlya, and De Ryp tried to penetrate along the east coast of Spitzbergen, and, failing to find a lane of open water, returned to Holland. He did not go round Spitzbergen, as Mr. Muller supposes, and has been erroneously stated by Mr. A. Petermann. In the following chapters we learn much that is exceedingly interesting about the difficulties in getting the Company fairly started, and in obtaining its charter from the States General, only for one year, and then for another year. For the people of Holland, though from the earliest times in favour of free trade, frequently became the victims of some monopoly. We find here some very interesting pages about the struggle between free trade and monopoly, and the arguments by which the States General were convinced of the necessity of granting a longer lease.

The animosities and jealousies with which the Company had to contend, not only from foreigners, but also from the Provinces, and even from the different towns in Holland, are portrayed in vivid colours, and show that the awakened spirit of enterprise, in the 17th century, was so strong that no difference was made between competitors. They were all, in the eyes of the monopolists, one as bad as the other, foreigners or fellow-countrymen.

During the whole period of its existence, the Company had to struggle for life, not only with arms, but also by the exercise of great diplomatic skill. When at last, in 1642, the Company had distanced all competitors, the whales disappeared from the shore where the Company had, or pretended to have, exclusive rights, and all its efforts, conducted with unflinching determination, came to nothing, because the whale no longer came near its establishments on shore, but was only to be found in the open sea, where monopoly was destroyed by free trade.

The period in which the Northern Company flourished was one of great national activity in Holland. It opened a new and excellent school for sailors, navigators, and naval men, who, among the ice-fields in the Polar Regions, acquired all those manly qualities which enabled them to fight so many gallant actions, and to give to the flag of the Dutch Republic such high renown.

We hope that Mr. Muller will continue a work which has been so well commenced, and that by so doing, and by laying before his countrymen a picture of the patient perseverance and great energy of their forefathers, he may reap the satisfaction of seeing them once more in the Arctic Regions, co-operating with other nations in that field of scientific research.

X.

* *Geschiedenis der Noordsche Compagnie*, door Mr. S. Muller, Fz., Witgegeven door het Provinciaal Utrechtsch Genootschap van Kunsten en Wetenschappen Utrecht, 1874.

MR. MARKHAM'S BLUE BOOK ON INDIA.*

THERE is a narrow-minded class of public officials to whom Statistics consist merely of a tabular or numerical statement bearing upon any subject whatever, and not a comprehensive and lucid exposition of all those facts and conditions which bear upon the present of the State and its chances of future development. Persons of this turn of mind cannot be urged too strongly to devote a few spare hours to an examination of Mr. Markham's *Statement exhibiting the Moral and Material Progress and Condition of India during the year* 1872-3. They will then find that statistical statements can be interesting, without detriment to their instructiveness, and that mere numerical statements, though indispensable, are not by themselves sufficient to convey a true idea of the nature of a country. The unpopularity of our Blue Books is due, in no small measure, to the fact of their containing merely figures, without any explanation of the method by which they have been obtained, or of their bearings upon the subject they are designed to illustrate. Certainly, in number and bulk, our Blue Books leave nothing to be desired, and exceed any similar collection published abroad, but to a great extent they are mere accumulations of indigested facts, promiscuously collected, and leave us in the dark with reference to many subjects of the highest interest and importance. We feel sure that a summary statement exhibiting the Statistics of the United Kingdom, and accompanied by a series of tables prepared in an intelligent manner, would prove acceptable to many who, at present, hesitate before they involve themselves in the ill-arranged arrays of interminable figures printed for their special benefit at the expense of the tax-payer.

Mr. Markham's work enters into nearly every subject of statistical inquiry, and his remarks on the land-revenue and other subjects bearing upon the material and moral condition of the people are particularly interesting. The volume, as usual, is illustrated by a series of capital maps, amongst which that of the Trade routes to Tibet, by Mr. Saunders, will prove particularly interesting, as it shows for the first time the route surveyed in 1871 by Major Montgomerie's 'Asiatic.' A series of Statistical Tables, prepared by Mr. C. E. D. Black, forms an appendix to the work. Statesmen and others desirous of obtaining a knowledge of India and Indian affairs cannot do better than devote a few hours to a perusal of this most interesting of Blue Books.

E. G. R.

THE GERMAN ARCTIC EXPEDITION.†

We reviewed at some length the German edition of this work in our numbers for April 1873, p. 24, and May 1874, p. 75. On the first occasion we noticed the first volume, and gave an account of the drift of the 'Hansa,' of the proceedings of the 'Germania,' and of the contents of the work which records them; and on the second we reviewed the botanical and zoological results of the expedition.

We now welcome the appearance of an English version of the first portion of the German work, in two volumes, containing the narratives of the loss of the 'Hansa,' and of the proceedings of the 'Germania' in winter-quarters, and during the spring explorations. Messrs. Sampson Low and Co. have done valuable service in giving this interesting narrative an English dress, which, like the German work, is embellished with numerous excellent illustrations, and a good map. The portion of the east coast of Greenland visited by the 'Germania' was discovered by Captain Clavering in the 'Griper' in 1823, when Sir Edward Sabine visited this region, as well as Spitzbergen, to swing the seconds pendulum. The German explorers made a minute and careful survey of the coast between 73° and 77° N. latitude; and their work is specially valuable as a fixed and well defined base on the east coast, to which, most probably, one detachment of the sledge travellers from the English Arctic Expedition of 1875-77 will direct its march. The publication of the English edition is, therefore, very opportune, as it will be useful to our officers; while the modestly told story of the adventures and sufferings of the 'Hansa's' crew, and of the exploring labours of their more fortunate brethren in the 'Germania' will secure the warm sympathy and interest of English readers.

A RAMBLE ROUND THE WORLD, 1871. By *M. Le Baron de Hübner*. Translated by Lady Herbert. London (Macmillan & Co.), 1874.

ALTHOUGH Baron de Hübner went over well-known ground, *i.e.*, across the United States by way of the Pacific Railroad, from San Francisco to Japan; thence to Peking, Canton, Hong Kong, and so home, the record of his travels is much superior to the writings of average modern travellers. The author, besides being a man of education, is possessed of a penetration and a freedom from prejudice which add considerably to the value of his remarks on foreigners. We were more especially struck with the passages devoted to the philosophical analysis of the American character, in which he draws a picture which though not flattering to our Transatlantic cousins, is infinitely less superficial than the general remarks of English observers on the same subject. Another portion of the book calling for notice is the very full account of the rise and development of Mormonism, a state of society which is represented in far more sombre colours than a certain English author has thought fit to paint it. The chapters assigned to a description of Japan will claim attention on account of the paucity of books of travel in that country, as well as the interesting nature of the subject matter. Before concluding we would speak in terms of praise of the translator, who has performed her duties excellently, and has greatly contributed to render this charming work appreciated at its true value by the English reader.

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EIGHT YEARS IN CEYLON. By *Sir Samuel Baker, M.A., F.R.S., F.R.G.S., &c., &c.* New edition, with Illustrations. London (Longmans), 1874.

THE RIFLE AND THE HOUND IN CEYLON. By *Sir S. W. Baker*. New edition, with Illustrations. London (Longmans), 1874.

TWENTY years having elapsed since the publication of the above works, the present editions may almost be looked upon as new books. And in truth the freshness with which are depicted the exciting incidents of sport, which abound in both of these little volumes, might fairly entitle them to be looked upon as a record of but yesterday's experiences. In his preface to the first-named work, however, Sir Samuel is careful to observe that

* *Statement exhibiting the Moral and Material Progress and Condition of India during the year* 1872-3. By C. R. Markham. Presented pursuant to Act of Parliament. Folio, pp. 254., 16 maps. London, 1874.

† *The German Arctic Expedition of* 1869-70, *and Narrative of the Wreck of the 'Hansa' in the Ice:* by Captain Koldewey, Commander of the Expedition, assisted by members of the Scientific Staff. (2 vols. 8vo. Sampson Low and Co.)

Ceylon has greatly progressed since the date of the book, and it is clear that the remarks on emigration, irrigation, and the cultivation of coffee, rice, and sugar, and other products, now require modification. But the description of the country, the scenery, the inhabitants, and above all, the hunting cannot but win the reader's attention. The style of writing too is pleasant. Sir Samuel writes much as he speaks, in a plain, unaffected manner, which not a little enhances the attention of his listeners. Our readers will doubtless peruse with interest these early experiences of one whose character owes much, we venture to say, to the course of training described in these volumes and which is so admirably adapted for developing those truly English qualities of decision, pluck, and hardihood which he has shown so unmistakably in his later and greater exploits.

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GUIDO CORA'S "COSMOS."

NUMBER IV—V. of the *Cosmos* opens with an interesting list of Italian travellers who have visited Egypt from the time of Leonardo Pisano (*circa* 1200), down to the Roman expedition, commanded by Captain A. Cialdi and despatched in 1840, to convey to Rome thirteen monoliths and other antiquities offered by Mehemet Ali for the Church of St. Paul, in that city. The official accounts of the Austro-Hungarian Expedition, and an abstract of Captain Prshevalski's travels in China and Tibet next find place, after which, come various notes on geographical subjects, among which may be mentioned a notice of some recent travels in Tunisia, accomplished by a native of Mash-had in Persia, whom the Marchese Doria picked up in 1863, while travelling in that country. This Persian is a youth of singular intelligence and powers of observation, and although he has not, strictly speaking, scientific knowledge, his account of his travels are valuable on account of their extreme accuracy. Signor Cora then supplies us with notices of the meetings of various Geographical Societies held in the early part of this year, and the number closes with an excellent map of the region contiguous to the boundary between Persia and Baluchistan compiled from Major St. John's map and the English Admiralty chart. The article which this map serves to illustrate will appear in the next number.

Cartography.

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Austrian Map of Central Asia.*

THE map of Central Asia prepared at the Military Geographical Institute at Vienna, and just issued to the public, may fairly be described as an enlarged edition of the well-known Russian staff map, first published in 1863, and since then frequently revised.† Out of the twelve sheets forming the Austrian map no less than eight are identical with the Russian original, or very nearly so, but on the four remaining sheets (viz. 4, 5, 7 and 8), a great deal of additional information has been inserted, and the map therefore possesses an original value. Khiva and the lower course of the Oxus has been revised in accordance with the results of the late military expedition, but the most extensive additions will be found in portions of Persia, and the neighbouring Afghanistan, and this improvement of existing maps is due, we believe, to Dr. F. E. Polak, who has travelled a good deal in the countries mentioned.

Having drawn attention to the good points of the map, our duty, as a critic, compels us to point out some of its shortcomings. The map is stated, on the title, to have been compiled from the "best and most recent Russian and English authorities." This assertion is not borne out by a closer inspection, for many authorities, easily accessible and of the highest importance, have been disregarded. The labours of the English missions sent to Kashgar have thus been ignored, and the old Russian delineation of the Pamir is retained; the Trans-Himalayan explorations made by Major Montgomerie's Pandit, though published six years ago, have not been noticed, nor has Captain Ross's journey through Baluchistan (published in 1858). Nor is the transcription of the Russian original satisfactory. We consider it of small importance that the Polish mode of spelling should have been adopted in preference to the English mode, which would have proved more acceptable to the majority of those likely to make use of a map of Central Asia. Far more serious are the errors and omissions of the translator, for many terms and abbreviations have either not been translated at all, or they have been rendered erroneously. The letter "K" is frequently met with, and the reader is allowed to find out that it stands for **k**olodez, the Russian for "well." The terms "See presnoe" and "solenoe," meaning freshwater and salt-lake, occur many times. "Pol." and "Poluos." mean poluostrof, peninsula, and "mecz," mechet, mosk. In brackets, behind the name of the fort Aralsk, we find the puzzling term "Uprazdneunoe," which ought to have been rendered "deserted." "Byw. Ukr." of the map, signifies deserted fort, and M. i Per, on the Jany Darya, are Russian abbreviations which mean "burial ground and dam." In other cases a translation has been attempted, but unsuccessfully. Thus, we find "Friedhöfe", along the Oxus and elsewhere, the translator having taken "Kl.," which stands for "Kliuch," spring, to mean "Kladbitza," churchyard! On sheet 6 we meet with the words "Kani ulan murun Werszina Jancy czana," which ought to have been rendered "Kani ulan muren, upper course of the Yang-tse-kiang," and in the same neighbourhood there is a "Holzweg," road through the woods (in the desert of Gobi!), which ought to have been rendered by "abandoned road."

Maps of Australia.

Mr. HUGHES' map of South Australia* extends to latitude 28° 30′ S., and will prove useful for office purposes. In the margin there is a general map of Australasia on a scale of 250 miles to an inch, a map of the Adelaide and Port Darwin telegraph line, on five times that scale, and a plan of the new settlement of Port Darwin and the county of Palmerston, on a scale of 5 miles to the inch.

The telegraph map of Queensland† is hardly more than a rough diagram showing the lines in operation, constructing, or proposed, by straight lines and three classes of telegraph stations. From a table inserted upon it we learn that in 1861 there were 169½ miles of line, and seven stations, and in 1873, 3059½ miles and 73 stations. In the former of these years 5678 messages were forwarded, in the latter 156,268, and up to the 31st of December 1873, 195,206*l.* had been expended in the construction of lines and stations. This is progress indeed!

* Generalkarte von Central-Asien bearbeitet nach den besten und neuesten Russichen und Englischen Quellen im. K. K. milit. geogr. Institut in Wien, 1874. Scale 1:3,024,000. 12 sheets. 12s. plain, 18s. coloured, single sheets, 1s. 3d. each. (London, Trübner).

† See *Ocean Highways*, 1873, pp. 79 and 120, and *Geographical Magazine*, 1874, p. 350.

* E. S. Wigg and Sons' map of South Australia, compiled and drawn by W. Hughes. Scale 10 m. = 1 inch. Adelaide, 1874. (London, Letts, Queen Victoria Street.) Price £2 2s. mounted.

† Queensland. Skeleton map of Telegraph circuits. Compiled by R. O. Bourne. Scale 27m. = 1 inch, 1874. (London, Letts.) 10s.

Log Book.

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The Arctic Expedition.—The Arctic Committee, appointed by the Lords of the Admiralty to advise them on all subjects connected with the expedition, consists of Admiral Sir Leopold McClintock, Admiral Sherard Osborn, and Admiral Richards. They have already got through much work, and all the preparations are advancing satisfactorily.

The first and most important point is the decision respecting the complement, and the selection of officers. Captain Georges S. Nares has been appointed to command the expedition. This distinguished officer was a mate on board the 'Resolute' in the Arctic Expedition of 1852-54, when he took an active share in the winter amusements, and did his part manfully as a sledge traveller. He acted in the theatricals, and gave a series of lectures to the men on winds and on the laws of mechanics. In the travelling he was away twenty-five days in the autumn of 1852, and travelled over 184 miles. In the spring of 1853 he was auxiliary to Lieutenant Mecham, and travelled over 665 miles in sixty-nine days. In 1854 he started in the intense cold of March, and went over 586 miles in fifty-six days. He has thus had considerable experience, and will be a connecting link between the former and the present generation of Arctic officers. After his Polar service, Captain Nares was in the 'Britannia.' He has published a valuable work on seamanship. Among other similar services he surveyed the gulf of Suez in the 'Shearwater,' and from 1872 to 1874 he has commanded the 'Challenger' during her important scientific expedition, the operations of which have been recorded in some of our previous numbers.* Captain Nares is now on his way home from Hong Kong.

Commander Albert H. Markham has been appointed as second in command. This officer entered the navy in August 1856, and served for eight years in China, during which time he was present at several actions in the war, and was promoted in 1862 for his gallant conduct in the capture of a piratical junk. From 1864 to 1867 he was a Lieutenant in the Mediterranean flagship 'Victoria,' and from 1868 to 1871 was First Lieutenant of the 'Blanche' on the Australian station. In 1871-72 he commanded the steam sloop 'Rosario' during a cruise among the Santa Cruz and New Hebrides Islands, when he was employed to investigate and report upon the cases of kidnapping, and the murders committed by the islanders.† This difficult duty was performed with tact and judgment, and, after a short service as First Lieutenant of the 'Ariadne' training ship, he was promoted to the rank of Commander on November 30th, 1872. In that year he undertook a voyage to Baffin's Bay and Prince Regent's Inlet, in order to acquire experience in ice navigation, and his work on the subject, *A Whaling Cruise in Baffin's Bay*, contains the latest account of the operations of the whaling fleet, as well as the memorandum of the scientific results to be secured by Arctic exploration.* Commander Markham has been serving on board the 'Sultan,' in the Channel Fleet, since October 1873, and is now on his way home from Lisbon.

Besides the captain and commander there will be two lieutenants in the advance ship. One of them will probably be Lieutenant Pelham Aldrich, who attained that rank in September 1866, and has since 1872 been serving as First Lieutenant of the 'Challenger.' The other officers will be a navigating officer in special charge of magnetic observations, three sub-lieutenants, a surgeon, an assistant-paymaster in charge, two engineers, and one scientific civilian. In the second ship there will be a commander, three lieutenants, three sub-lieutenants, a surgeon, an assistant-paymaster in charge, two engineers, and one scientific civilian. The scientific staff will be selected under the advice of Dr. Hooker, the President of the Royal Society. Each officer will undertake some special duty connected with the objects of the expedition, and no pains will be spared to ensure successful results. With the exception of three ice quarter-masters for each ship, selected from amongst the most experienced whaling seamen, the crews will consist of man-of-war's men. An experienced Danish dog-driver and interpreter, named Carl Petersen (not McClintock's interpreter of the same name, but a younger man), who was cooper at Upernavik, has also been engaged and entered. The complement will be about sixty officers and men for each ship.

The exploring vessels have already been selected. The first is the 'Alert,' a steam sloop of 1045 (751) tons, and 381 (100) H. P. She is now in dock at Portsmouth, where she will be thoroughly overhauled and strengthened for her encounters with the ice, and fitted with new engines and boilers. The second ship is the 'Bloodhound,' a fine steamer built for whaling, by Messrs. Stephen of Dundee, about two years ago, and bought by the Admiralty. She has also been sent round to Portsmouth to be strengthened and fitted for an exploring ship. The 'Bloodhound' is 160 feet long, with 29 feet beam, and 18 feet depth of hold, tonnage 556 (379). Both the 'Alert' and 'Bloodhound' will receive new names when they are commissioned for the Arctic Expedition.

The Committee has also made progress in the arrangements for ordering dogs and drivers in Greenland, for the preparation of pemmican, and the provisioning and clothing, all on the same liberal scale as in the cases of previous expeditions. The early appointment of the other officers, in order that they may have as much time as possible to prepare for their special duties, is now the most urgent step.

Indian Marine Surveys.—The latest arrangements for the resumption of this important duty (styled by the *Bombay Gazette* the other day "one of the most useful public works which have yet been carried out in this country") may be briefly told. Six trained surveyors of the Royal Navy have been nominated by the Lords of the Admiralty for service in British India, and they will be borne on the books of

* See *Ocean Highways* for December 1872, p. 275; January 1873, p. 311; September 1873, p. 225, and October 1873, p. 271, and the *Geographical Magazine* for August 1874, p. 183; September 1874, p. 225; October 1874, p. 286.

† See *Ocean Highways* for July 1872, p. 111, and June 1873, p. 117.

* See *Ocean Highways* for June 1873, p. 90; for November 1873, p. 309; and for January 1874, p. 424.

the flagship there. Their Lordships have also assented to the transfer of Mr. R. C. Carrington, one of their accomplished draughtsmen, as Civil Assistant to Captain Taylor in the compilation of charts at Calcutta. Staff-Commander J. Ellis, from the East Coast of England Survey, the senior officer of those lent to India, has gone out with Captain Taylor. Navigating Lieutenant Jarrad is to start with Mr. Carrington on the 14th of January for Calcutta. Navigating-Lieutenants Coghlan and Hammond are to join from the West Coast of Australia and East Coast of Africa; Sub-Lieutenant George (son of that veteran surveying officer, Staff-Commander George, who has been for many years Curator of the Geographical Society's maps) and Sub-Lieutenant Petley, from H.M.S. 'Nassau' and 'Magpie.' All are not expected to rendezvous at Calcutta before mid-February, and this delay necessitates a change of programme. Captain Taylor is hastening to Bombay, where he will put officers on board the 'Constance' schooner, and 'Clyde' steam tender, and probably despatch them to survey the new Travankur coffee port of Colachull, then the Paumben Pass, and Coringa Bay. These much-needed surveys can be conveniently carried out by the vessels *en route* to Calcutta. After February strong southerly winds, the precursors of the Bengal monsoon, are a drawback to boat operations along the Orissa coast, and therefore its examination is postponed till November next; but that of the mouths of the Ganges or Megna, including all the shoals and shelter between the Don Manik Islands and the Chittagong shore, will probably be proceeded with by the brig 'Guide' and the schooner 'Lady Lawrence,' till the rains actually begin. When the Bengal monsoon is over, work will be commenced in real earnest with such an efficient staff of surveyors as India may well be proud of, and the wishes of the Chambers of Commerce of all three Presidencies will be duly considered.

It ought to be mentioned that the credit of calling the attention of the Government of India to the importance of a good survey of the Indian seaboard, is due mainly to Mr. A. O. Hume, C.B., the Secretary to the Government of India, at the head of the Department of Revenue, Agriculture, and Commerce, at Calcutta. The fact that these marine surveys will be under that zealous Secretary—who so watchfully attends to the interests of the Great Trigonometrical, the Topographical, and Revenue Surveys of that vast country—augurs well for the future progress of the new Department.

The British Indian Expedition to Yunan.—After the return of Sir Douglas Forsyth's successful embassy to Kashgar, it was decided, if the Chinese Government would consent, to send an expedition from Burmah to Yunan. The Chinese had just given the finishing stroke to the Panthay rebellion, and had no grounds for refusal on the pleas of danger from rebels, or want of authority. They, therefore, readily conceded all that was asked of them, which was passes for a party of four Europeans, and a certain number of servants to cross into Yunan from the Burmese border, to travel within the province, and either to return or to proceed to the sea-coast of China. The head of the mission will be Colonel Browne, one of the deputy commissioners of British Burmah. The second will be Mr. Ney Elias, the eminent traveller and Gold Medallist of the Royal Geographical Society, who has recently been appointed Assistant Political Resident at Mandalay. A consular officer from China will also be attached to the mission, and the fourth member will probably be Dr. Anderson, who accompanied Colonel Sladen to Momien in 1868; and whose work was reviewed in our number for October 1872, p. 207. There will also be a guard of Sikhs or Gúrkhas.

There are only two routes at present in use between Burmah and China. One is by way of Bhamo. The other is the direct road from Yung-chang or Shun-ning through Theinnee to Mandalay. Sprye's route, for through traffic, is entirely abandoned. The object of our Government is to ascertain which of the frequented and practicable lines is the most advantageous. It has, therefore, been decided to take the Theinnee road on the outward journey, penetrate as far as the capital of Yunan, and then return by the Bhamo route, taking Tali-fu on the way. The Shans, under a national chief named San Hai, are in a state of passive rebellion against the king of Burmah to the east and north-east of Thiennee, but caravans pass freely through San Hai's territory, and he is known to be friendly to the British, as well as to the Chinese Government.

Although there will be no discoveries on these routes, still there is a great deal of interesting geographical work to be done, in spite of the fact that some portions of the country have already been surveyed by Garnier. The removal of artificial difficulties from the natural routes will also have the effect of developing the present small trade into a moderately large one. At present the Bhamo route is the favourite with the traders of British Burmah, who are nearly all Chinamen of Rangoon or the Straits Settlements. The Theinnee route is preferred by the merchants of Yunan, who trade chiefly with Mandalay. The former use the fortnightly steamers direct to and from Rangoon and Bhamo all the year round. The latter employ mules, which can only travel during the dry season. The greatest amount of trade is at present by the Bhamo route, and came up to about 200,000*l.* for exports and imports, between October 1873 and October 1874.

The Yunan Mission was to have started from Mandalay in December.

A Russian Caravan Journey to Másh-had.—Information has reached us of the progress of the caravan* organized by Colonel Glukhofsky in April last for a journey across Northern Persia to Kabul and back by way of Balkh and Khiva. The object of this experiment was to obtain all possible information respecting the trade, means of transport, and general condition of Eastern Persia, Affghanistan, and the minor states of the Upper Oxus. The *Journal de St. Petersburg* now states that although they expected to start in April, it proved so difficult to ascertain, either from books or from the Persian residents in Moscow, anything definite respecting the trade of the countries they proposed to traverse, that it was June before a departure was effected. The route was from Moscow to Nijni-Novgorod, thence down the Volga to Astrakhan, where the caravan arrived on the 28th of June, and left the 8th of July; thence to Baku where they took ship for Gaz or Gez, a poor village

* See *Geographical Magazine* for June 1874, p. 130.

with some ruined caravanserais on the south-east shore of the Caspian, and arrived at Astrabad. The transport of a *pud* of merchandise from Moscow to this point costs 1½ rouble, and as this raised the price of the sugar they had brought to 40 copecks more than what Tiflis sugar fetched in the market, they were compelled to leave their stock behind. From Astrabad to Shâhrûd the caravan goods were conveyed on mule back along a route which is smooth at first, but soon becomes mountainous, stony, encumbered with fallen trees, and of considerable difficulty. The road is altogether about 40 versts in length, passes through one small village, and is surrounded with mountains covered with oaks and walnut-trees. There is a longer way from Astrabad to Shâhrûd, but it is haunted by roving Turkmen. Shâhrûd was reached on the 29th of July. This is, commercially and strategically, considered a town of some importance; there are caravanserais and bazaars, and plenty of scope for trade. But notwithstanding all the endeavours of M. Baumgarten, a Russian trader, who has for some years resided in the place, the caravan was unable to get rid of its goods in bulk, and after paying a toll of 2 roubles 80 copecks per *pud*, it was allowed to go on to Sabzavar, which place was reached on the 20th of August. The vicinity of the town here offers excellent opportunity for the growth of mulberry and cotton. The manufacture of silk, however, is declining, and there are but three silk-weaving establishments, as compared with seventy last year! The price of French sugar, which had come from Tiflis, proved that Russian sugar cannot at present compete with it in Sabzavar. Nearly all the trade is in the hands of a few Americans, who make a good thing out of it; there are a few Affghan merchants from Kandahar, but they do but little business. On the 23rd of August the caravan set out for Másh-had, followed by an Englishman, Captain Napier, who arrived at Shâhrûd while the Russians were in the town. The *Journal* intends to supply its readers with information respecting the further progress of the caravan.

Dar-Fur.—We are indebted to the German traveller, Nachtigall, for an account of the events which preceded the annexation of that country to Egypt. Several years ago, Zeber, a man of some education, left Khartum to seek his fortune in the unexplored countries lying between the Bahr-el-Ghazal and Dar-Fur. He gained much influence amongst the slave and ivory dealing Bakara, and succeeded in establishing a sort of sovereignty over the heathen districts of Telkauna, Kuturaka, Hofra-t-en-nehas, Shala, and Bina. Soon afterwards, another adventurer, Bulaláwi Mohammed, left Khartum for the same regions, and having persuaded the Egyptian authorities of being able to bring the countries between the Nile and lake Tsad under their sway, he was supplied by them with soldiers, arms, and money. But he soon quarrelled with Zeber, and about 1872 lost his life in a skirmish. The Egyptian Government, who had looked upon Bulaláwi Mohammed as their servant, condemned Zeber in contumaciam, but the latter, nothing abashed, reimbursed the Government the expenses incurred on behalf of his rival, and asked to be allowed to take his place. He made friends with the Rezekat Arabs, and was thus enabled to keep up regular communications with Kordofan. These Arabs, however, at the instigation of Dar-Fur, it is said, plundered a caravan at Shegga, killing a number of the people accompanying it. Zeber punished the plunderers, and occupied Shegga, which is close to the frontier of Dar-Fur. He offered the newly-acquired territory to Egypt, was eventually appointed Colonel and Mudir, and soldiers were sent to him. Zeber assured the ruler of Dar-Fur that he was desirous of living at peace, but, in spite of this assurance, established a post at Kalaka, in the territory of the Habbania, the western neighbours of the Rezekat, and, undoubtedly, subjects of Dar-Fur. The Sultan of Dar-Fur sent an army against the invader, but met with a defeat. This was early in 1874. The Egyptian Government soon afterwards took measures for occupying Dar-Fur, and on the 17th of August, Dr. Nachtigall witnessed the departure from el-Obeid, in Kordofan, of 1500 men commanded by Ismail Pasha Ayub.* The country has since then been annexed to Egypt, and two expeditions, each consisting of eleven officers, a surgeon, twelve surveyors, and sixty-three men, left Cairo on December 5th for the purpose of its exploration. The first of these is commanded by Colonel Purdy, and will explore the country between the Wadi el Hamed and Dar-Fur; the second expedition, under Colonel Colston, will proceed to Dar-Fur by way of Debbe and el-Obeid. Subsequently both expeditions will proceed by different routes to the Sobat River, and finally they are to explore lake Albert Nyanza and the country to the west of it as far as the equator.

An Austrian Naturalist in Gordon's Nile Expedition.—Herr Ernst Marno has been selected on the recommendation of the Vienna Geographical Society, on behalf of the Austro-Hungarian nation, to accompany Colonel Gordon's Nile Expedition. It appears that the Colonel was anxious to give his expedition the character of an international, rather than a military undertaking, and having secured representatives of England, France, the United States, and Italy, he applied through the Austrian Consul at Khartum for a naturalist of that nationality to join his party, promising to defray all expenses beyond Berber. Herr Marno, who has been selected by the Vienna Geographical Society, is peculiarly fitted for the post. He speaks Arabic, knows the country round Khartum well, as well as the character of the natives, is thoroughly acclimatised by residence in these parts, and possesses high scientific qualifications. A sum of 6000 florins has been subscribed for his journey, and Marno will accordingly start for Suez, from whence he will travel down the Red Sea, land at Suakin, and thence make his way to Berber by the caravan route. From Berber he will be conveyed by steamer to Gondokoro, Gordon's head-quarters.

Australian and New Zealand Statistics.—The following statistics have been got together with great care, and are thoroughly reliable. They refer to the end of 1873. The whole population of Australia

* The battles referred to in the *Times* as having taken place at or near Kalaka, on the 17th of June and 2nd of July last, must have been fought by Zeber unaided, though it is strange Nachtigall, who was in the country at the time, should have heard nothing about them. Perhaps we ought to read September and October instead of June and July. Shegga, referred to above, is six or seven days' march to the S.S.W. of Omshanga, the easternmost town of Dar-Fur, and the latter lies seven days east of Fasher, the capital of the country. The population of Dar-Fur is estimated by Nachtigall at 5,000,000 souls.

is 1,825,692, the most populous colony being Victoria, which has 790,492 inhabitants, New South Wales 560,275, South Australia 198,257, Queensland 146,690, Tasmania 104,217, and Western Australia 25,761. The revenue of the Australian Colonies is 9,754,671*l.*, the rate of taxation being 2*l.* 8*s.* 2*d.* per head. The public debt of all the colonies together is 31,762,487*l.*; the value of imports 35,738,295*l.*, and of exports 36,407,428*l.* in 1873. The total annual value of the Australian trade is thus 72,145,723*l.* There are 1364 miles of railway open, 1505 in course of construction, and 18,448 miles of electric telegraph. The number of acres under cultivation is 3,085,214, of horses 737,511, of cattle 5,123,458, and of sheep 45,796,270.

The English population of New Zealand is 310,437; the revenue 1,420,216*l.*; the rate of taxation per head, 3*l.* 18*s.* 10*d.*; the public debt, 12,509,546*l.*; the value of imports, 7,241,062; of exports, 5,521,800*l.*; of the total trade, 12,662,862*l.*; the number of acres under cultivation, 1,226,222; of horses, 81,028; of cattle, 436,592; and of sheep, 9,700,629.

Obituary.—HENRY LISTER MAW.—We have to record the death of a veteran naval traveller. Born in 1801, Henry Maw entered the navy in 1818, and was severely wounded when a midshipman in H.M.S. 'Liffey' during the first Burmese war. The report of his services by Captain Marryat, the senior naval officer on the station, secured him his lieutenant's commission, which he received on July 25th, 1825. While serving on board H.M.S. 'Menai' in the Pacific, in 1827, he obtained permission from Captain Seymour to undertake a journey and voyage across the Andes and down the Amazon to Pará. He was thus the first Englishman to explore and describe the mighty river Amazon from near its source to its mouth, and his interesting *Journal of a Passage from the Pacific to the Atlantic* was published by Mr. Murray in 1829. Lieutenant Maw afterwards served in the West Indies, but did not go afloat subsequent to 1834. He became a retired commander in 1861, and died on the 7th of December 1874, aged 73.

DR. H. J. BURKART died on the 6th of November at Bonn, aged 76. In 1825 the deceased entered the service of the Tlulpujahua Mining Company, in Mexico. Three years afterwards he undertook the management of the Bolanos Mines, and during his term of administration the company realized a clear profit of 928,850*l.* In 1834 Burkart returned to Germany, where he wrote an account of his travels and published a geological map of Mexico.

DR. JOHANN HEINRICH PLATH, a well-known Chinese scholar, died on the 16th of November last, at Munich, aged 73. He was the author of a *History of the Manjus*, as well as of numerous papers on Oriental subjects, and has left the concluding part of a work on Confucius ready to go to press. To geographers he is best known as the writer of the geography of China in Wappaeus' edition of Stein and Hoerschelmann's *Handbook of Geography*.

ERRATA.

In our last number, p. 389, 2nd col., line 39, *for* εις την πολιν *read* εις την πολιν; and line 42 *for* W. Mark's, *read* St. Mark's.

Correspondence.

THE IDENTIFICATION OF THE TAGIGUINIA OF CLAVIJO.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—I take the liberty of addressing to you some observations with reference to the letter of Colonel Yule, published in your last number at pp. 389-390. Your learned compatriot is perfectly right in attributing to a *lapsus calami* my having placed Zaghanian on the left bank of the Oxus. Istakri places that fortress, and its district, at four days' journey from Termed, and Hukankuba at five days (see *Bib. Geographorum Arabicorum ed De Goge.*, i., p. 339, and ii., p. 401). Nevertheless, I believe I am right in seeing in *Saghanian* the exact translation of the *Tagiguinia* of Clavijo. That name is twice mentioned by the Spanish traveller, at page 1, as the name of the first or one of the first countries conquered by Timour, and at p. 115, where he says, speaking of the town of Anchoy, "this city was beyond the land of Media, in a land called *Tagiguinia*." Now, as the successes obtained by Timour in Saghanian, between Termed and Badakshan, refer to the commencement of his career (see *Inst. of Timour, by Major Daly*, p. 55, *et seq.*), I believe that the *Tagiguinia* of the first page of Clavijo ought to be identified with *Saghanian*. If this be so, the very serious difficulty, pointed out by the learned editor of *Marco Polo*, only refers to the second *Tagiguinia*, mentioned at p. 115 of your translation. But it seems to me that Colonel Yule himself disposes of that difficulty in a way which leaves nothing to desire, by recognizing that name in that of *Jazgana*. For we know from Yakout (*Dict. Geog. de la Perse pour Barbier de Meynard*, p. 177) that the Arabian geographers designated by *Djouzdjan* and *Djouzdjanan*, a vast district of the province of Balkh, situated between that city and Merw-er-rand, and which embraced the territories of Edirab, Meimanah, Shebirghan, and, evidently, also Andkhoud or Achay.

As to the hesitation of Colonel Yule to affirm that the name of Saghanian was still in use in the days of Timour, I believe that it ought not to continue after the two quotations from the memoirs of Baber, which he himself refers to. And if at pp. 60 and 61, he tells me that he reads of the fortress *Shaghanian*, we read at p. 84 of the English translation (p. 99 of the Djaghatai text *ed. Kazan*), "On halting at the valley of the *district of Shaghanian*." The name of this district is mentioned later by the Turkish traveller, Sidi 'Aly, who visited Transoxiana in 1555 (968 A.H.), and who wrote it *Tchaghanian* (see *Relat. du Voyage de Sidi 'Aly, trad. pour M. Moris, Paris*, 1827, p. 97). I believe that the first *Tagiguinia* of Clavijo must be the *Saghanian* of Oriental geographers, while the second is, as Colonel Yule supposes, the *Djouzdjan* of the Arabs.—Yours, &c.

N. DE KHANIKOF.

LIEUTENANT CAMERON'S DISCOVERY.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—I do not know whether you will think worthy of admission the following remarks on Mr. Waller's criticism; remarks that it would have been a presumption for me, not an African traveller, to have made at the meeting of the Royal Geographical Society on Monday, the 14th of December.

Rivers issuing from lakes do not, I believe, as a rule—certainly they do not always—issue with a strong current; even though these rivers may have lower down a very strong current, with rapids or falls. The Niagara River "glides along at first with a clear, smooth, and tranquil current" writes Sir C. Lyell (*Principles of Geology*). The St. Lawrence too issues calmly from lake Ontario. To come nearer home, I have seen the small river Kirkaig, on the West Coast of Sutherlandshire, when

"in spate" issuing from lake Kirkaig with a trivial current, though a mile below it has a fall of 30 or 40 feet, and is a torrent nearly all the way to the sea. Its neighbour the Inver is another example; so is the Shin; but the last I have not seen "in spate." Does the Jordan issue furiously from lake Tiberias? I cannot in any work at hand find information as to this.

As to the (supposed) outlet of lake Tanganyika being choked with grass, &c. One might expect that when the streams running into the lake would bring most grass down, and when the outlet would cause a set towards itself from the greatest distance, then the outlet would draw in most grass, and might get choked up. This may seem mere theory; but it is a fact that in the Amazons Valley channels often get thus choked up in flood-time, and canoes have then to find a way through the flooded woodland: afterwards, paradoxical though it appear, the channels clear themselves.

As to the 55 days journey down the Congo. If the journey were made by water this seems quite enough, as 10 miles a day down stream is a moderate estimate.

In conclusion, I will only add a hope that Lieutenant Cameron may be backed up in his spirited and persevering efforts.—I am, &c., F. R. G. S.

———:o:———

BALA SAGUN AND KARAKORUM.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—With reference to my previous letter, I beg to add the following notes:—

Khieou, surnamed Tchang-Tch'un, in his journey to the camp of Tchinghiz-Khan in 1221, gives very definite information as to the situation of the country of which the capital was Bala Sagun. An account of this journey, which was preserved in the Daos books, was translated from the Chinese into Russian by Father Palladii, and was published in the *Labours of the Russian Spiritual Mission in Pekin*, 1866, vol. iv., page 261. A French translation, by M. Pauthier, appeared in 1867, in the *Journal Asiatique*, 6ième série, t. ix., p. 39. Apparently the two travellers have used different texts, for the Russian translation is three times as long as the French, and contains many exceedingly interesting details which the other omits, especially the odes composed on his journey, at different times, by Tchang-Tch'un. At the same time many passages which are evidently alike are differently rendered.

The general route of the traveller is most easy to trace, and even the details are readily verified by one who is acquainted with the country. From lake Sairam-Nor Tchang-Tch'un passed through the defile of Talki, and arrived at the city of Alima, in the present province of Kuldja. The city was named, as he says, from the Turki *Alma*, an apple, and its position can even now be traced. Going from here westward for four days he reached a large river flowing from west to east, which he crossed in boats on the 19th of October 1221. This river can only be the Ili, which, from the Russian version, it is evident that the traveller had not before seen, and not the Tchu, as Lerch supposes, or the Talas, as is thought by Palladii. In the Russian translation the name of the river is given as the Talasu-Mulian; in the French translation it is called the Ta-tsze-sze (Teh-ke-sze), which apparently points to the river Tekes, a large affluent of the Ili flowing into it a little above Kuldja, and which may at that time have given the name to the river. After crossing the river and going southward he came to a range of high mountains, the present Ala-tau, at the foot of which was a small fortified town. Going from here westward for twelve days, he crossed a mountain to the south-west, probably at the Kastek Pass. Proceeding from here southward he came to a river, the Tchu, which he crossed on a wooden bridge (probably near Tokmak), and from here went westward along the foot of the mountains until they suddenly fell away to the south, and were mere ruins of red stone, identified by Lerch as the present Akhyr-tepé near Anlié-ata, and thence to the town of Sairam. This country, comprising the valley of the Tchu and the rivers that fall into it, Tchang-Tch'un says, was the possession of Tashih-Linya, (Yeliu-Tashi) a prince of Liao, whose capital we know was Bala Sagun. Tchang-Tch'un relates the history of the country, the reception and treachery of the Norman prince, and its subsequent conquest by the Sultan of Kharezm and by Tchingiz Khan in the same way as the Mussulman authorities.

Had the city of Bala Sagun been on his route, he would in all probability have mentioned it, and we must therefore suppose that it was somewhat farther to the north of the valley of the Tchu. Many ruins exist here, but they have not yet been investigated.—I am &c.

ST. PETERSBURG, *November* 20th. E. SCHUYLER.

———:o:———

ETYMOLOGY OF AOSTA.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—In the *Saturday Review* of the 14th November, the writer of an interesting article upon Aosta, whose picturesque descriptions and trenchant style at once disclose his identity, calls attention to the fact that the name Aosta is but a modified form of Augusta. Besides the parallel instances which he quotes of Augsburg, Autun, and Zaragoza, I would venture to call his attention to two other cities which bore the same Roman name, on this side the Alps from Augusta Prætoriana: one, Augustum, now the little village of Aoste in the department of the Isère, close to the Rhone at its great southern bend, a station on the Transalpine Roman road as one ascended from Vienne; the other Augusta Tricastinorum, now Aouste, on the banks of the Drône, between Die and Valence. So too Augusta Ranracorum survives in Augst—Kaiser's Augst it has sometimes been called—in Canton Aargau a few miles east from Basel. In Italy, Augusta Taurinorum has adopted the tribal name and become Turin. Augusta Vagiennorum has disappeared both in name and in reality, but a small Augusta to the north of Ravenna, near the southern mouth of the Po, still preserves its name and insignificant existence in Agosta. The Agosta or Augusta in Sicily owns as its founder a mediæval emperor, the Suabian Frederic.—Yours obediently,

OXFORD, *November* 1874. T. R. BUCHANAN.

———:o:———

PARHELIA IN ENGLAND.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

Sir,—The sight of a mock-sun in England is perhaps about as rare an occurrence as the sight of a whale, although both are no doubt familiar enough to voyagers in the Arctic Regions. On Tuesday, December 15th, about ten minutes to twelve o'clock, there appeared in the southern sky about 28° east of the true sun, and on the same altitude, a splendid example of the northern parhelion.

Like most parhelia of this kind it was connected with a prismatic bow, small portions of which only were clearly visible above and below the mock-disk, streaming up and down like coloured aurora, or part of a rainbow, as patches of cloud behind became dense enough to form a background for its display.

From the time I first observed this phenomenon till its final disappearance was about twenty minutes, during which time the actual sun was surrounded by a dense white fuzzy halo, and I felt certain that this was the harbinger of snow, although there was nothing else at the time to indicate its immediate presence. At seven o'clock the same evening the snow came, and by seven next morning had fallen here to the depth of 9 inches.

Now, sir, I need scarcely say that all sorts of weather phenomena, however unusual it may be in our temperate climate, would neither be difficult to predict, nor come upon us unexpectedly were we acquainted in time with the movements of those agents which generate and control their production.—Yours &c.,

ELMSTEAD, MALVERN, *December* 1874. G. P. YEATS.

Proceedings of Geographical Societies.

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ROYAL GEOGRAPHICAL SOCIETY.

December 14th, 1874.

THE President, Sir HENRY RAWLINSON, took the chair at 8.30 P.M. Among those present were Lord Arthur Russell, Lord Houghton, General Rigby, Sir Rutherford Alcock, Sir Cecil Beadon, Viscount Duprat, Mr. Monteiro, Mr. H. L. Cameron, and Mr. Waller.

In opening the proceedings the President said the business of the evening related to two expeditions which were sent out two years ago for the relief of the lamented Livingstone. The immediate subject of the meeting was the journal of Lieutenant Grandy on the West Coast of Africa in his attempt to ascend the Congo in search of Livingstone. But before entering upon that subject he took the opportunity of informing the Fellows of the success which had been achieved on the other side by Lieutenant Cameron. A full account of this important discovery will be found in the leading article of our present number, to which we beg to call special attention.

Sir Henry then briefly introduced to the notice of the Fellows the facts of Lieutenant Grandy's mission, who, it will be remembered, was sent by the munificence of Mr. Young, of Kelly, to try and meet Livingstone on the Congo by penetrating from the West Coast; and, after a plucky attempt to carry out his mission, was baffled by the opposition of the native chiefs, and was waiting on the Congo River for the recurrence of the proper season for a renewed attempt, when the news of Livingstone's death was conveyed to him up the river, with a letter of recall from the Royal Geographical Society.

Mr. CLEMENTS MARKHAM then read Lieutenant Grandy's report on

LIVINGSTONE CONGO EXPEDITION.

THE Expedition left Liverpool on the 3rd of November 1872, and, calling at Sierra Leone to procure men, proceeded to St. Paul de Loanda, where the outfit was purchased, and finding on enquiry that Ambriz would be the best place to obtain carriers for the interior, we started for that port on the 15th of February 1873, and after considerable difficulty in procuring the requisite number, left on the 12th of March.

The journey from Ambriz to Bembe occupied eleven days, and we reached the citadel of Bembe on the 23rd, after a breather up the hill, which is very steep, and were very kindly received by the chief, who housed the men very comfortably in a portion of the barracks, and gave us a lock-up store for our cargoes. The last carriers arrived at 3 o'clock, and shortly afterwards the rain came down in torrents, with much thunder and lightning, which lasted till midnight. This is the season for heavy rains. The finest months at Bembe are May, June, July, and part of August, when the weather is nice and cool. The latter part of August and the month of September are also considered fine. In October and November there is plenty of rain. In December, January, and February light rains. March and April are the big rains. Bembe is the most advanced port of the Portuguese, and at the same time a very important one, as commanding the roads to and from the interior. The fort is in a very bad state of repair, and there was a strong rumour that the Portuguese intended abandoning it. There are four markets held on consecutive days near Bembe: the first is called Candoo, the second Conzo, third Kangue, and the fourth Sonha.

March 25th.—Paid a visit to the copper-mines. There seems still to be a considerable amount of ore there. Formerly they had an English manager here, and every requisite in machinery, but the manager died, and the Company got into difficulties, and the whole plant was eventually destroyed by fire. There is a chief at Encoge, three days south of this place, through whom communication is kept up with Loanda. The place produces large quantities of good quality coffee, and fine sheep may also be obtained; but the climate, from the greater quantity of rain that falls, is much more unhealthy.

At Tombo, which lies about seven days' journey from this, good cattle are obtained for cloth: it produces also coffee, india-rubber, tobacco, palm-oil, &c., and is considered a large place. Sierra Bembe, which is a remarkable mountain, and round the base of which passes the Luguria River, is 1695 yards from the fort. I took a boiling-point on its summit, which gave a mean reading at 208°.1—barometer 28° 16'; thermometer at commencement, 78°; at finish 82°.

Thursday, April 3rd.—Having vainly endeavoured to procure carriers from the different villages round Bembe, who one and all refused to go, even when the chief exerted his authority to assist me, saying there was too much water, and too much long grass on the road, we determined to send to the king of Congo for men, and accordingly despatched the interpreter, one soldier, and a *capata*, with letters from the chief and ourselves, and a good present.

Wednesday 9th.—Paid a visit to the caves, which are in the same valley as the mines, but a mile further to the south-eastward: they are very interesting, and the rocks from which they have been scooped form a strange feature amongst the surrounding soil of slate and shale, being composed entirely of limestone. The entrance to the first cave is by a low, narrow passage, and having arrived at the end, you enter a circular vaulted chamber about 35 feet in diameter and 40 feet high. Beyond this again is another chamber, nearly 60 feet in height, and also circular. In these caves, it is said, the natives deposited the copper ore they collected at the mines before the Portuguese took posession. Passing round to the right, after emerging from the two first chambers, you enter a second cave of greater extent, but not so singular in shape, the roof gradually sloping to the ground. We found some few specimens of malachite in the caves.

Sunday 20th.—At 4 o'clock, our party returned from Congo, bringing with them sixty-six carriers. They were six days coming back, and report the roads very bad; they brought several letters from the chief, and one for us, expressing a wish that we would come speedily, and enumerating a list of articles I was to bring as presents.

Thursday 24th.—Started the sixty-six carriers with an escort of seven men. We were both down with fever so badly to-day that had not the chief kindly assisted us in arranging matters, we could not have got them away to-day. They have promised to send us more men back from the towns as they proceed.

Wednesday 30th.—Having succeeded in collecting thirty more carriers, started my brother, with six men as escort, for Congo on the morning of May the 1st, and accompanied them as far as the river Loozi, and superintended the crossing. This river is generally insignificant, but, owing to the heavy rains, had overflowed its banks, and was nearly 90 yards across. There was considerable difficulty in getting the cargoes across, the natives being afraid as the river in the centre was chin deep, and but for our men they must have encamped for the night.

Sunday, May 4th.—There was a conference held to-day with the Soba of Matatu about taking charge and care of the fortress of Bembe when evacuated by the Portuguese, and it was partly agreed that on consideration of his doing so he was to receive 200,000 beads per month and the Soba of Bonde 60,000 beads. I cannot help thinking it a great mistake to give up possession of a place which is the key to the interior, and a day will yet come when they will repent having relinquished

a position that cost Portugal so many lives and so much money to obtain. The moment the troops leave the roads to the coast will be stopped, and Ambriz will suffer a great loss of trade.

Wednesday 7th.—The requisite number of carriers arrived to-day, and I had fever unfortunately too bad to allow of moving, so did not make a start until 9 o'clock on the morning of the 8th. I was exceedingly sorry at parting with the chief, who, in his kindness and attention to our men and selves, has been almost as a brother. He pressed on me from his small store some rice, wine, bread, &c., and accompanied me to the first village, where he embraced me and wished me Godspeed and good fortune. Our men, I am glad to state, fell in of their own free will, and one of them acting as spokesman for the rest, thanked the chief for his great kindness to them. The chief seemed much moved at their gratitude, and said he had never known black men thankful before.

Two hours' march north brought us to the Loozi River which fortunately had resumed its normal condition, being only 9 feet across and 4 deep, the stream going to the westward. Crossing the river we passed up through the village and proceeded in a northerly direction for Miembe, where we slept the night. Starting at seven the following morning, twenty minutes' walk brought us to the cross roads, one of which leads to Zombo. Here, stuck on poles, were the heads of two men, who had a few days previously suffered torture and death for theft. Their calcined bones were in the grass, and their clothes hung on the bushes. The heads, on which the wool and flesh still remained, presented a very ghastly spectacle. The day's march was principally through long grass, with some climbing. The road being tolerably good, we descended to the Lafoozi River, and crossed it by a bridge that had just been completed above the rapids. I paid a toll of 12,000 beads for the crossing of the whole party. We were detained here an hour and a half getting the donkeys across and repairing their loads. The men enjoyed a good bath here and astonished the natives with diving and swimming. At 1 o'clock, we arrived at the village of Loofoosa, where, as the capatas and carriers belonged to the village, we halted for the night.

The chief paid me a visit after dinner, and I explained to him the object of our journey; how Dr. Livingstone had been labouring for more than thirty years, giving up home, country, and friends, and devoting his life to their benefit, and eradicating the curse of their country—slavery. I explained to him the manufacture and use of india-rubber and candles; and that his country supplied the materials, by the cultivation of which, and sale to the white man, his country would greatly prosper. He seemed perfectly to understand and appreciate the necessity, but replied, that unfortunately he was very old, and that his people were too indolent to cultivate more ground than their wants required.

Saturday 10th.—We were away this morning by 7, being anxious to cross the Breeze River, the passage of which, owing to its swollen state and strong current, with the unpleasant addition of a tornado, occupied five hours, and but for the courage and skill exhibited by our men, one canoe would have been lost. By 9 P.M., everything, including the donkeys, had crossed, and breasting a very steep hill, we were glad to reach the little village of Kingo.

Thursday 15th.—We ascended a hill and saw the Congo plateau 6 miles ahead. The ground here was cultivated, corn, sugar-cane, beans, &c., growing plentifully. Anxious to complete our journey, we pushed on, and passing through the village of Kimalo down to the valley, arived at and crossed the Luaji River, which had considerably overflowed its banks, and rendered the passage of it difficult. One hour's march brought us to the village of Ovoonda, where we were met by a number of King Totala's people, and, in company with them, after half-an-hour's journey, reached Congo, and had an audience, delivered to the king some letters, &c., and then begged him to excuse us a short time, while we changed our wet clothes. Returning, we were received with great state, the old king sitting on a chair, under a huge state umbrella, habited in the uniform of a Portuguese lieutenant and surrounded by his sons and principal chiefs. Chairs were placed for our accommodation and rugs and carpets spread in profusion; salutations were exchanged amid a flourish of trumpets, tom-toms, &c. He expressed his great joy at being visited by Englishmen, requested to be allowed to salute us with 100 guns, and hoped that we should remain a long time with him and consider his town as our home in that part of the world, and that many more would follow us, for he was very fond of the white man. After an introduction and general shaking of hands with all the principal chiefs, we were allowed, as it was getting dark, to retire and attend to ourselves, promising to come early in the morning with the presents.

Friday 16th.—While busy selecting cloths for the king, he sent to ask me to shoot a bullock for ourselves and men, and refused to accept more than a hind quarter for himself. About noon we marched the men to his place with the presents, with which he was very much pleased, saying no white man had ever so honoured him. We considered it necessary to give as much as possibly could be afforded, in order to make a good friend of him, he being the most important person in the country, whose influence would materially affect our future prospects. In the afternoon he paid us a visit, and we broached the subject of the carriers, and difficulties immediately presented themselves—bad state of the roads, quantity of water, danger of being fired upon, price, &c. We managed to dispose of his objections one by one, and it was eventually settled that two of his sons were to busy themselves in obtaining carriers, and he would send a messenger to the king ahead to clear the road for us.

Congo, or the San Salvador of the Portuguese, is situated on an elevated plateau 1500 feet above the sea level. It has formerly been an extensive fortified city, surrounded by a loopholed wall, averaging 15 fee in height and 3 feet in thickness, portions of which are still standing. There are also the ruins of a large church or cathedral at the north-west portion of the town. The Portuguese held military occupation for some years, but abandoned it in 1870, and their forts and barracks are now ruins, completely overgrown with rank grass and shrubs. The town is supplied with water from a beautiful spring, which issues in three small streams from the clay soil half way down the plateau on the east side of the town. There are very few trees near the town; bananas, plantains, and fowls are plentiful and cheap, and the farms of beans, cassava, and ground-nuts are well kept. There are three markets weekly held near the town. The Congoese are great snuff-takers, are well clothed, and a great many speak Portuguese. They are dark coloured and of average height, but not muscular; indifferently armed with flint muskets and knives, and very fond of hunting. They make free use of the knife in their quarrels, not using it as a dagger, but giving long sweeping cuts across the back, breast, and stomach. They are habitually lazy. The women are decently clothed, modest and virtuous, and exceedingly industrious. They tend the farms, look after the house, and cook the meals, whilst the man sits quietly down and smokes his pipe. Polygamy is general in the country, and a man is accounted rich according to the number of his wives, who, as soon as married, select a piece of ground which they industriously farm, the produce being sold at the markets for beads, cloth, &c. The king of Congo has two nephews, and, by the laws of the country, one of them, who shall be the choice of the people, succeeds to the throne. Failing a nephew, the people elect a king themselves. The sons of the king do not in any way participate, nor are they entitled to any of his property; but during his lifetime he can appoint them to chiefships of towns in his kingdom as vacancies occur.

The king of Congo commands the roads from the interior to the coast, and levies contributions on all "chiboukas" of ivory. He was once a very powerful chief, and, being supported by the Portuguese, was much respected; but since they withdrew from Congo he has been gradually sinking to the level of other chiefs, and, although he keeps up an outward show of authority, he has very little power.

May 18th.—Had a consultation this morning with the old hunters and the king's son about the different roads, and am convinced that the one to Sundi is the shortest and best. They call it nine days' journey without loads, or twelve days' with loads, and say the travelling is good, and that silver and copper are found there.

Friday, June 20th.—After innumerable delays and vexations enough to try the spirit of any Job, we have at length succeeded in collecting and paying the carriers, and managed at 5 P.M. to get away from Congo, and after an easy march in a northerly direction, arrived at the small village of Kikembo. I began to fear we never should get out of Congo; the disaffected people were constantly bringing in reports that chiefs whose towns we were to pass had sent word that they intended to fire upon and exterminate the whole party, and, therefore, carriers had better not come with us. These and like stories, which it would be tedious to repeat, lost us a whole month of the best season of the year. We insisted upon the king punishing one man whom we had caught setting his countrymen against us, and preventing the carriers from offering their services. We went, before leaving, to wish the king good-bye, and make him a parting present. He was very thankful, and begged us to think that he was our great friend, that his heart was right towards us, &c.; that he had done his best to get us forward; but his people kept the carriers back by circulating lies about the dangers of the road; that we would eat them when we got them far away, and never allow any of them to return to their country.

Saturday, June 21st.—Did not get away till late owing to some of the carriers having returned to Congo for the night. Half an hour brought us to a gorge, through which we passed, and down the high level of a valley, hills nearest on the right hand with outcrop of granite. We can plainly see that this would have been a very bad road three weeks earlier—the valley would have been a swamp. The grass is similar to that we met with from Bembe to Congo, where you pull your hat well down over your eyes to take a header, emerging only when you arrive at your destination; nothing to be seen above the wall of grass but the heavens, and often not even that. The sun was very hot to-day, and after an hour's slow travelling, the carriers came to a halt at the head of the valley. They are a miserable lot, stopping every five or six minutes. After many delays we reached the village of Kintano, where we halted for the night; had a visit and present from the chief, and took the opportunity to explain all about ourselves and our mission, and managed to do away with the bad impression existing in their minds about us. We were well pleased, for this was one of the towns named where we should meet with opposition; and instead we have been well received, the carriers have taken heart, and now talk very courageously.

Sunday, June 22nd.—Started at 6.30, and an hour's journey brought us to the Loanza Swamp, which occupied an hour in crossing, owing to the difficulties of getting the donkeys through the slush and mud. Passing up to and through Banza Loanza, in five minutes we reached another swamp, crossing which we arrived at the village, where we found the chief, who, by especial desire of the carriers, had been sent ahead with presents to clear the road, and was to have met us at Makoota. Continuing in a north-easterly direction for Kilêinbela (the road good, with less grass, but a good deal of climbing), we reached that place in a couple of hours. I received a very extraordinary message from the king of this town, asking me to order my men to wear their trowsers, as he did not consider the handkerchiefs, which the men usually wore on the march, sufficient clothing. I could not help smiling at this excess of modesty, but, nevertheless, satisfied his whim. We were kept waiting an hour before being admitted to an audience, during which time it was evident, by the king's appearance and manner, his people had been priming him with palm wine. He was a fine, tall, muscular-looking man, but, being very drunk, was quite the savage, dancing and capering round us like a big baboon, and flourishing a rusty old sword, and declaring that no man was to move out of his town under penalty of death. Foreseeing the effect this was likely to have on the carriers, we endeavoured to arrange a large present for him and proceed; but the threat had already taken effect, and the carriers were already bolting from the town, and by 8 P.M. not one was to be found. Here was a dilemma! These men had been paid to take us to Makoota. King Totala had made them a long speech before leaving Congo, urging them to fulfil their contract, and sending his own secretary, and two principal chiefs on purpose to give them confidence, and yet a few words from a half-drunken man had frightened them away. One chief who volunteered to accompany us from Kikembo alone remained faithful, but he was forcibly dragged away by his own people. Of course we were very angry at such conduct on the part of the king, and the following morning early, when we thought he was sure to be sober, we sent for him, and said how shamefully he had behaved. But expostulation was useless; he declared it was all a mistake, that he had been told the carriers were to leave us here—this being the limit of the King of Congo's territory—and that his people were quite capable of taking us to Makoota. Finding we were trapped, the best plan was to put a good face on matters, and tell him that as we were anxious to proceed, if he would collect the carriers without delay we would give him a handsome present.

Kilêinbela is a considerable town on the borders of Congo (this new kingdom extends as far as the Quilo River, where you come upon the Makoota territory); it is situated on the top of a hill, with water round. There are large groves of palms here, and ground-nut farms, but no corn, plantains, or bananas, which is rather remarkable. There are two good markets near, which are well supplied. There are two varieties of bean, the ground (creeping) and tree-bean; the latter is sometimes left for two years before cut down. This place could produce a large quantity of palm-oil annually. We explained this matter to the king, and gave him a candle, telling him that was made from the stearine, and that, if he chose to manufacture the oil and send it to the English factories, he would obtain a good price. He replied that he had no idea they would purchase it, but that he would now give his attention to it, and send forty loads to Boma as a trial; he is also going to try and grow corn and bananas.

One hour's slow travelling in a northerly direction is the village of Keweve, the approach to which is through the finest bit of wood we have seen—the trees large, lofty, and abundant, affording a grateful shade. The village rests on a hill, is large, well built, and clean; in fact, the place had quite an air of civilization about it. A further journey of an hour and a half, and we were at Mokumbo, where reside the family of the King of Kilêinbela. This village was also well kept, and there were plenty of fine sheep, also goats, pigeons, and fowls. Passing through the village and emerging through the trees, we saw to our right the mountain range of Lombo, with a plain some 12 miles in extent intervening. The day was very warm, and the carriers were a good deal done up when we reached the village of Onza, which, although belonging to our king, refused at first to allow us to remain (some malicious natives having spread reports calculated to deter us), but after a long palaver, and taking into consideration that the sun had gone down,

they allowed us to halt. They cultivate large quantities of corn (maize) around this town, and we noticed large fields of it near the villages we passed to-day.

July 6th.—We reached the town of Moila, the chief of which is a son of our king. The men and women took to the bush on our arrival, and it was some time before they could be coaxed back. The following morning the chief paid us a visit, and made a present of a sheep. We remained the day, as there was a market held ahead, and the chiefs were afraid the drunken men would be firing on the carriers. They held a grand "batook" in the town, which lasted till past midnight. These country people are very fond of dancing, at least the male portion, and think nothing of keeping it up all night, when the moon will give them light enough.

Leaving Moila on the 8th of July, we arrived at the village of Mokanda. On the 15th of July we again made a start, and in half an hour reached the Quilo River, which we crossed by a native suspension bridge, exceedingly strong, and well constructed of monkey rope. It would bear ten carriers with loads, but oscillated so that many of them preferred crawling to walking; the river was very low, being the dry season. It is said to be swarming with alligators, and we were afraid we should lose some of the donkeys in swimming them across, but fortunately got them over safe, about half a mile below the bridge, where there was less water, having paid four pieces of cloth to the chief of Banyanga, who collects the bridge tolls. We passed on through his village, and crossing the Luanga River, reached the town of Lāquā, where we remained for the night. After crossing the Quilo River the aspect of the country changes: there are remarkable and abundant outcroppings of limestone rock, some rising abruptly from the grassy plain to an altitude of 100 feet, and from their weather-beaten appearance resembling rocks in the sea. The soil has also changed from brown to blue clay, of which the native pots and pipes are manufactured at Makoota. The following day we passed through a large grassy plain (a swamp in the rainy season), and reached the small village of Muncola, where the carriers came to a halt and positively refused to proceed any farther; and when we sent for the king, he said it would first be necessary to send a messenger ahead with a present and await his return. To guard against excuse for the carriers bolting this was done; but then no guide could be found under any promise of payment to take the messengers to Tungwa. Fortunately, we had one man who knew the road, and he with three others was sent. They returned at 8 P.M., having delivered the present to the chief, who said it was all right, but that as our present to the King of Makoota had miscarried, and he was the principal, we must send him another, which was accordingly done, the men starting early on the following morning. Shortly afterwards there was a free fight with knives and sticks among the carriers, and then word was sent us that they must have three furs more each before they would move the cargoes. An offer was made them of four pieces of cloth, which some were inclined to accept, as it was only two and a half hours' further journey to Tungwa; but in the middle of the negotiations a messenger arrived, stating that our king and all his followers were bolting out of the village as fast as their legs could carry them, and, of course, the remainder of the carriers immediately followed suit. We sent, and the chief of the town also, to stop the king, but to no purpose. At the time we were at a loss to account for this sudden stampede, but heard afterwards that word had been sent to the King of Kilêinbela, that if he attempted to go to the chief town with us, his head would be struck off. Being anxious to reach Tungwa as speedily as possible, I started with one man, and after a smart walk of 2¼ hours arrived at the market-place, where I was requested to wait until my arrival was announced to the chief. Shortly there arrived a headman with about forty of the townspeople. He told me they were busy with the burial of the chief's son (which accounted for the firing of guns and tom-tomming that was going on), that in the name of the chief he was very glad to see me, but could not understand what a white man was doing such a long distance from the big water. I explained our mission and requested him to ask the chief to supply us with carriers and bring us on to his town, without delay; and asked to be allowed to enter the town and visit the chief. He returned, promising speedily to send an answer. I was kept waiting till after sunset, when our own messengers returned, bringing back with them all the presents that had been sent, with a message to the effect that we must not pass by that road, as their father had forbidden it, and that they would not supply us with any carriers. As nothing more could be done that night we returned to the village of Muncola, and the next morning went again to the market, accompanied by the chief of the village and three or four men, bearing presents, and invited the chief of Tungwa to a council to state his reasons for refusing the road, after receiving our first messenger from Congo, accepting the presents, and inviting us to come. The palaver lasted nearly the whole day, and ended most unsatisfactorily: they would not accept our presents or give us carriers on the road. Their father had forbidden it, therefore the matter was out of their hands. Finding no amount of coaxing or presents would have any effect upon them, we concluded it better to return to Muncola and arrange carriers to take us to Kinsuka, and skirting the territory of Makoota, reach Sundi or some other part of the river. We were the more inclined to adopt this plan, as the season was already well advanced, and time was of the utmost consequence to us if we intended to be of any assistance to Dr. Livingstone. Had we not been encumbered with baggage we might easily have pushed past these people and gained the river, but our duty was plainly to reach the Doctor, with sufficient goods for his party and our own.

Tungwa is by far the most populous and best built town we have seen, the streets are regularly laid out and cleanly, the people are ivory traders, and the whole place has an appearance of prosperity. Our interpreter said the chief had in his house chairs, tables, and every article of European manufacture that is traded with, and lives in comparative luxury. He looked upon our presents as being very insignificant. The estimated population is about 1600. The river, which rises from a fountain about 8 miles eastward of the town, flows round three sides of it, the fourth having a background of hills, the slopes of which are cultivated. Since crossing the Quilo River, we have noticed the natives are smaller in stature and of a lighter colour, this being especially remarkable with the Tungwa people. Banza Macoota, the residence of the king, is a large manufacturing town lying in the valley to the northward of Tungwa; it is noted for pottery pipes, mats, and grass cloths. The surrounding country is very fertile and well cultivated, producing sugar-cane, corn, ground-nuts, mandioca, yams, beans, &c., poultry, sheep and goats, are also plentiful. The river Tungwa flows past the western end of the town. The chief of Muncola gave us a great deal of trouble; would not allow his people to sell us any provisions, and was constantly sending us threatening messages, and delayed procuring us carriers until he found we were determined not to leave until he found the men. After four delays we succeeded in obtaining the requisite number, and began in the morning retracing our steps, reaching Lāquā in a few hours, where the carriers all bolted from us again; but as the chief immediately offered to supply their places, it was easy to see what arrangement had been arrived at. Unfortunately it is the custom of the country to make all payments before starting. We often, foreseeing the inconvenience of it, and how completely we were at the mercy of the chiefs and carriers, tried to break through the custom, but to no purpose; they would not touch a cargo until all had

been paid for. The usual trouble here; and as the distance to Banza-Umputa was only a little over 4 miles, we determined to move the cargoes with our own men, seeing which the natives rushed in a body, and cut the bridge over the river. This was rather too much of a joke, so I marched, revolver in hand, to the chief's house, and taking possession of him, gave him to understand that unless it was repaired in twenty minutes I would shoot him and burn his town. He disclaimed all knowledge of the affair, had the bridge hastily repaired, the carriers accepted the cloth they had already refused, picked up the cargoes with alacrity, and hastened on; but the moment they had crossed the Quilo River by the bridge, they dropped their burdens and ran for it, and we were some hours collecting it all at the Banza.

The following morning we started four men, accompanied by two appointed by the chief of this town, to Kinsuka with presents, and a demand for carriers. They returned next day, having reached as far as Zonzo (the next large town to Kinsuka) the chief of which refused our presents, saying the king of Makoota had sent him word that we had been refused the road, and asking him not to allow us to pass by his road. He said he was sure there was something wrong about us or the king would not have run away at Muncola; that he did not trade nor his people; and he was perfectly satisfied to wear country cloth and use native mats. He did not want us nor our presents in his country, and we had better go back to Congo and try some other road. Thus was our second chance lost; but knowing the influence of the king of Congo, and mindful of his promise to come in person and assist in clearing the road, I sent immediately to request him to come and bring with him the required number of carriers, as these people would not furnish us with any, except on condition that we went back, and we were naturally anxious to retain a position which had cost so much time and cloth. While the messengers were on the road to Congo, acting upon information, we despatched men to Tungwa with additional presents, and after five days delay (during which time all manner of conflicting reports were received), they returned. A meeting of chiefs took place, and they discussed our request for the road. The king of Makoota did not attend, but both he and the father of the chief of Tungwa refused to allow us to advance. The young chief, who commands the eastern portion of the town, sent me word that if we would return to Congo, and procure 200 soldiers, he would "pat his stomach" (equal to an oath and more binding) to me, and carry me with his own men to any place on the river I chose to name. He said he would first kill his father and burn his town—nice youth!—and then dare the king of Makoota to interfere with him. Out of all the presents sent by the son of the king of Congo—Lema—he only received 8 fathoms of cloth, the remainder having been disposed of on the road. The messenger from Congo arrived, bringing intelligence that Congo town had almost been cleared out by small-pox, that the king was very ill with it, and all hope of assistance from him was at an end, so there was nothing left now but to speedily retrace our steps to Congo, and thence by the Embomma road to the river and up the left bank. It was very disheartening to be thus thrown back with the season so far advanced, and the prospect of being dropped frequently on the road, but it could not be avoided, and we commenced collecting carriers at once. We have found these country people to be exceedingly timid, superstitious and suspicious, always imagining evil of us, although we acted in the most straightforward manner towards them, concealing nothing of our intentions, and mixing freely with them, in order to accustom them to the white man. They thoroughly believed, at Tungwa, that we had come to find out about the ivory trade, and look for copper and silver at Sundi and Opombo, as the Portuguese had done at Bembe. In estimating the population, they take no account of the women and children, but only those who bear arms.

Banza Umputa musters 136 men, of whom 130 have guns. They have five seasons to the year, which go by two months and a half; they reckon twelve months to the year. July, August, and half of September they call "Sevoo" or summer; half of September, October, and November "Bangala," or dry season; December, January, and half of February "Māsanzā," or winter; half of February, March, and half of April "Kundey," heavy rainy season; half of April, May, and June "Kintombo," or Spring. Bangala commences when this (August) moon is finished. No rain falls until Bangala is finished, then follow two months' light rains, and then the heavy rains. September is the month for burning the grass all over the country, and it is the hunting season. Very few of them travel during that time: they calculate 30 days to the month. The marriage customs are rather peculiar. As soon as a young man has built himself a house, and can assure the parents of the girl that he has sufficient money to keep a wife, he can marry. Girls are betrothed at their birth, and the intended husband continues to make presents to the parents, and give cloths to the girl until she arrives at the age of puberty, when she is handed over to him. In the event of a married man dying, if he has a younger brother, his estate and wives are handed over to him. If there is no brother, the wives go back to their parents, and the children are supported by the deceased man's family, and his property sold. They keep no account of the children's ages after they are two years old. A man is not allowed by "fetish" to cohabit with his wife after the birth of a child until it can walk alone. In many villages there is what is called a young man's house. When a boy is about eleven or twelve years old, he leaves his parents' house for this place (only returning for his meals), where he lives with the other young men until he marries. When chiefs are in mourning they never wash their faces, and according to the degree of relationship, the period extends from three to twelve months. Pawning is carried on very extensively—a man will pawn his child, his gun, or his knife to procure cloth or beads when hard up, and if the pawnbroker does not choose to demand repayment, with interest, of what he has advanced, the property becomes his absolutely. Palm trees are abundant, and average five bunches of fruit, equal to a gallon of oil, without taking into account the nuts, and bear two crops annually. This is all wasted; they say it is too much trouble to make it, and they are quite content with what they make by their ground-nuts.

The country from this to the north and east is more open, the valleys are not so deeply undulating, the soil is rich, and, under cultivation, capable of producing anything. After the usual delays and palavers, &c., we commenced our march on the 15th of August, for Congo, which we reached on the 29th of the same month, having been deserted by the carriers three times on the road. Here we found a wretched state of things, the king very ill, half the town dead, and everything looking very desolate; houses nearly all shut up, the men have disappeared, and the women wander about the town neglecting their farms and plantations. All is hushed; the clink clink of the blacksmith's hammer, which so often reminded us of the villages at home, is no longer heard. I passed by his shed to-day, and found it ruined and deserted. There lay the anvil and the tools and the remains of the charcoal fire; but the presiding, where was he? Gone, alas! like many, to the home of his fathers.

It was not until the 10th of October, owing to the great mortality amongst the carriers, that we were enabled to make a start from Congo for Banza Noki, where we arrived on the 22nd of the same month, having great trouble with the carriers on the road, who eventually deserted us at Banza Vokay, and we were compelled to employ fresh ones to reach the river. Here (Lucango) we found ourselves among friends, Mr. Pardo, of Boma, having a factory at this place, and he kindly placed the

house at our disposal. We found the river had already risen 4 feet, and they say it continues to do so until the 21st of December, when it begins to fall. There is a steady current mid stream at present of about 5 knots, breadth 850 yards. Finding, after enquiries, that the kings on this side of the river would not allow us to go to Yellalla, we crossed to the opposite shore, north side of the river, and having pitched the tents, erected huts, and housed the baggage. We paid some visits to the neighbouring kings to arrange carriers, but they all stated that the season was too far advanced, the rains had already commenced, and they could not supply carriers until they were over. Finding, after repeated attempts that nothing could be done, we commenced preparing our winter quarters, cleared some land, and planted it.

We remained here until the 11th of December, but as the natives would no longer sell us food, and we could not catch enough fish or shoot game to keep us, we were compelled to break up the little colony and go down the river to Mussuco, where we were very hospitably received by Mr. Pardo, who was just re-opening a factory there. We built houses for the men, and having a store placed at our disposal, safely housed the cargoes. We remained at this place until the 10th of April. During the time we made frequent excursions to the different chiefs, both on the north and south banks of the river, negotiating for the road, and eventually succeeded, by making very handsome presents to Aurlongo (the King of Banza Noki) in gaining him over. We commenced moving out of our winter quarters on the 10th of April, and on the 17th of the same month heard with profound regret of the death of Dr. Livingstone, through Captain Hopkins, who ascended the river on purpose to meet us and give the intelligence; but conceiving it still our duty to proceed, we pushed on and had just completed arrangements for crossing the river above the falls when the letter of recall from the Society overtook us, and complying with instructions, we, with many regrets at the idea of leaving our work unfinished, when all seemed so full of promise, commenced preparations for the return, leaving good presents with the chief in order to procure a good reception for those who might come after us.

The Congo, which is one of the grandest rivers of the universe, and still awaits exploration, is navigable for steamers to a distance of 110 miles from its mouth, even in the dry season; it floods twice annually, the first and great rise taking place from 10th of September to the 23rd of December, the second from first week in March till nearly the end of June. In 1873 it only rose 9 feet 6 inches with the first flooding, and 2 feet with the second. A very low run was expected at the end of August of this year, owing to the small quantity of rain which fell. There are hundreds of canoes on the river, some of them capable of carrying 3 tons of cargo. A very large trade in nuts and oil is carried on with them between Boma and the towns and markets above the factories. The natives are very skilful in the handling of their canoes, yet a great number of lives are lost annually through the swamping of their frail craft by whirlpools. They stand to paddle, singing the while. The large canoes have two men to steer, and six to paddle; they choose the early morning for descending the river when there is no wind. The fishermen use nets shaped like a spoon, and choose dark nights for their work, one man holding a lighted brand over the water, whilst the other dips up the fish attracted by the glare with the net. For the guidance of future travellers in the Congo country I would suggest that all the carriers be engaged at Sierra Leone, where any number can be obtained for 1*s.* 3*d.* a day. From my experience of them I can safely say they will be found to answer every requirement, and the employment of them would render an expedition entirely independent of the natives, who by their cowardice and constant desertion, entailed upon us such heavy expenses and serious delays.

IMPERIAL RUSSIAN GEOGRAPHICAL SOCIETY.

THE above body held their monthly meeting on the 6th (18th) of November. Among the publications of the Society for the month of October were cited the first volume of a Russian translation of Ritter's *Iran*, edited, revised, augmented, and supplied, with a notice of Ritter, his life and works, by M. Khanikof, and a statistical account of the Russian possessions in Central Asia by M. Jahnsen. The latter work contains a detailed account of the Zarafshan by M. Sobolef, a task which has earned for the writer one of the minor gold medals of the Society; and an account by M. Terentief of the Syr-Daria Province. The first volume of Captain Prjevalsky's important work is in the press, and will be out in time for the annual meeting of the Society.

M. WILSON, the Secretary, proceeded to give an abstract of the results of the Amu-Daria expedition, most of the members of which were present at the meeting. The labours of the expedition were concluded about the end of September, and Colonel Stoletof, the commander, reported that the only difficulty in the way of navigation above Nukus, is the inequalities in the channel of the river, and that this difficulty can be met by employing local fishermen as pilots. There is a sufficient depth of water throughout, and the proximity of the navigable channel to the banks on either hand is a great help. Major Wood made a calculation of the mass of water at the mouth of the Amu, and of the same above the first canal, and he arrived at the conclusion that about half the total bulk of water is diverted for irrigation, but sufficient care is not exercised in its distribution, as a good portion is allowed to run to waste in the sands. The Amu rises to its height in July, when the snows in its upper course melt.

With reference to the natural history department, M. Wilson announced that Messrs. Sievertsof and Bogandof had made zoological excursions in the vicinity of Petro-Alexandrovsk and Nukus; M. Smirnof, the botanist, had made collections on the banks and islands of the Amu; and M. Barbot de Marny had geologically examined the Kushkan-Tau Range, Chimbai, Nukus, Shurakhan, Meshekli, and the Sheik Jeli Hills, and from thence carried his investigations on across the Kizil Kum to Samarcand. M. Barbot de Marny had detected an important difference between the geological features of the eastern and western shores of the Aral Sea, the first being limestone, and the second chiefly tertiary deposits, which prevail throughout the Ust Urt. Two members of the expedition, Messrs. Dorandt and Milberg, have remained behind to carry on meteorological observations for the space of a year.

The results of the levelling operations carried on between the Aral and Caspian Seas were telegraphed by Colonel Tillo to the Society, and, from them, it appears that the Aral is 250 feet above the Mertvi Kulduk, or Dead Bay of the Caspian. This vitiates the measurements of Zagoskine, Anjou, Duhamel, Berg, and Struve, while it corroborates, in a measure, those of Colonel Stebnitsky in 1872, who made the Igdy Wells, on the old bed of the Oxus, 191 feet above the Caspian.

Tidings had been received from M. Miklucho Maklay, dated Ti-Panas, in Java, 5th of October (we give a *résumé* of the recent travels of this energetic traveller on another page). In order to co-operate with the approaching Paris Geographical Congress, it was announced that a Committee of the Society had been formed, with Count Lütke at its head, to consider how best that end might be achieved. M. Karazine, a painter, who had accompanied the Amu Expedition, excited much interest by the exhibition of an excellent set of water-colour drawings, which he explained in detail.

M. POLIAKOF then related the result of his researches (instituted at the instance of the Imperial Geographical Society, and of the Natural History Society of the St. Petersburg University) in the physical geography of the

water-parting between the basins of the Baltic, the White Sea, and the Upper Volga. He showed that a plateau, from 900 to 1000 feet in height, near the sources of the Volga, runs in a north-easterly direction with a gradually decreasing height till it reaches an altitude of about 450 feet near the source of the Onega. M. Poliakof's observations proved that the plateau had been originally covered with glaciers. The Valdai plateau is studded with lakes originally formed by the melting of glaciers; the primitive rocks there are covered with more recent formations, among which are large detached blocks of granite, while traces of moraines are very frequent. Examination of the basin of the Shek-sua seemed to indicate that two distinct series of lakes had been formed there. M. Poliakof stated that in most places he came frequently upon stone implements, while in other places he had not found a vestige of them, which seemed to prove that the extent of waters formerly was much greater than at present. The destruction of timber-trees, however, he considers as but a remote cause of this desiccation, the more probable one being the physical peculiarity of the soil. He contended from the similarity of the *fauna* that the basins of the Baltic, of the White Sea, and of the Upper Volga must have been originally united, and regular communication possible from sea to sea.

M. Poliakof's paper was received with interest, and after the sections and surveys made by the Amu Daria expedition had been exhibited, and a vote of thanks passed to Colonel Stoletof, the commander, and to M. Brioukhof, the captain of the corvette, the proceedings terminated.

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